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657 AB13

CONTENTS

Founding Editor of Abacus Honoured
ASSET REVALUATION FORUM
Editorial
The SEC's Ban on Upward Asset Revaluations and the Disclosure of Current Values
Fixed Asset Revaluations and Managerial Incentives
Asset Revaluations and the Mitigation of Underinvestment
The Case Against Asset Revaluations

Emerging Evidence of Early Indian Accounting
Income Tax Effects on Asset Revaluation and Managerial Analysis
Goodwill — an Example of Puzzle-Solving in Accounting — a Comment
Goodwill — an Example of Puzzle-Solving in Accounting — a Reply

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p 6268

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ABACUS
A Journal of Accounting, Finance and Business Studies

CONTENTS

Founding Editor of *Abacus* Honoured 1

ASSET REVALUATION FORUM

Editorial 2

The SEC's Ban on Upward Asset Revaluations and the Disclosure of Current Values *R. G. Walker* 3

Fixed Asset Revaluations and Managerial Incentives *Philip Brown, H. Y. Izan and Alfred L. Loh* 36

Asset Revaluations and the Mitigation of Underinvestment *Greg Whittred and Yoke Kai Chan* 58

The Case Against Asset Revaluations *Scott Henderson and Jenny Goodwin* 75

Emerging Evidence of Early Indian Accounting *Michael E. Scorgie and Somendra Chandra Nandy* 88

Income Tax Effects on Asset Valuation and Managerial Analysis *Joseph K. Cheung and Mandy Li* 98

Goodwill — an Example of Puzzle-Solving in Accounting — A Comment *John R. Grinyer and Alex Russell* 107

Goodwill — an Example of Puzzle-Solving in Accounting — A Reply *Ronald Ma and Roger Hopkins* 113

ABACUS
A Journal of Accounting, Finance
and Business Studies

CONTENTS

Accounting Earnings Announcements and Differential Predisclosure Information *Teresa Anderson* 121

An Innovation in Auditing: Matrix Summaries of Journal Entries *Wesley C. Sampson and Michael J. Olan* 133

A Political History of Goodwill in the U.K.: An Illustration of Cyclical Standard Setting *Christopher Nobes* 142

Patterns of Research Output in the Accounting Literature: A Study of the Bibliometric Distributions *Kee H. Chung, Hong S. Pak and Raymond A. K. Cox* 168

Harmonization of Accounting in France and Britain: Some Evidence *Peter Walton* 186

A Field Study of the Review Process: Research Note *Peter Roebuck and Ken T. Trotman* 200

Measuring International Harmonization and Standardization: A Comment *Leo van der Tas* 211

Measuring International Harmonization and Standardization: A Reply *J. S. W. Tay and R. H. Parker* 217

Index to Volumes 25–28 221

Accounting and Finance

Vol. 32 No. 1 May 1992

THE EFFECTS OF MANAGERIAL ROLES ON THE RELATION BETWEEN BUDGETARY PARTICIPATION AND JOB SATISFACTION
Mitzi Leung and Alan S. Dunk 1

VOLUNTARY DISCLOSURE OF FINANCIAL SEGMENT DATA: NEW ZEALAND EVIDENCE
Michael E. Bradbury 15

FURTHER EVIDENCE ON EMPIRICAL RELATIONSHIPS BETWEEN EARNINGS AND CASH FLOWS
Majella Percy and Donald J. Stokes 27

DIVIDEND POLICY AND CAPITAL STRUCTURE UNDER THE IMPUTATION TAX SYSTEM: SOME CLARIFYING COMMENTS
Peter F. Howard and Robert L. Brown 51

MULTIVARIATE COINTEGRATION TESTING OF THE EFFICIENCY OF AUSTRALIA'S SPOT FOREX MARKET
Allan P. Layton and Amirullah Tan 63

EDUCATION NOTES 72

THE ROLE OF COMPONENTIAL AND INTEGRATIVE KNOWLEDGE IN ACCOUNTING EDUCATION
Waymond Rodgers and Thomas J. Housel 73

BOOK REVIEWS 88

P6268

Journal of the
Accounting Association of Australia and New Zealand

ABACUS, Vol. 28, No. 1, 1992

657
Ab13

Founding Editor of *Abacus* Honoured

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Emeritus Professor Raymond J. Chambers received two major honours in the United States recently. At the 1991 Annual Convention of the American Accounting Association held in Nashville in August, he received the 'Outstanding Educator Award' of the American Accounting Association — the first non-American to receive the award — and he was inducted into the 'Accounting Hall of Fame', which is located at Ohio State University.

Professor Chambers was appointed Professor of Accounting in the University of Sydney in 1960. He has published over 200 articles and several books. His collected works, extending to five volumes, were published by Garland Press in 1986. He has received many awards, including the first Gold Medal awarded by the American Institute of Certified Public Accountants. He was the American Accounting Association's first International Distinguished Visiting Lecturer and is an Accademicio Ordinario of the Accademia Italiana di Economia Aziendale. He served a term as the National President of the Australian Society of Accountants, and is both an Officer of the Order of Australia and a Fellow of the Academy of Social Sciences in Australia.

The citations for both awards noted Professor Chambers' long and distinguished contribution to the discipline and practice of accounting through his editorship of *Abacus*. He founded the journal in 1965 and remained as editor until 1974. He is still an active member of the Editorial Board.

Murray Wells
August 1991

ABACUS, Vol. 28, No. 1, 1992

EDITORIAL

Asset Revaluation Forum

Revaluing assets is a common accounting practice in Australia, so much so that recently promulgated regulations prescribe how such revaluations should be accounted for. In the United States, on the other hand, asset revaluations are rare, while in the United Kingdom and other European countries practices vary. Part of this issue is devoted to a forum on asset revaluations. It comprises two papers arguing the merits of asset revaluations, one arguing for their prohibition and one providing an historical perspective on the topic.

Taking the latter first, Walker's historical account is based on primary source materials of the events and regulatory action surrounding asset revaluations in the period pre and post the formation in 1934 of the Securities and Exchange Commission. Events surrounding the issuance of ASR 4 in 1938, which severely limited the practice of 'writing-up' assets, are documented and analysed. Henderson and Goodwin put forward the negative case, arguing that 'asset revaluation is theoretically unsound', because it is inconsistent with the historical cost system in which it occurs. They identify costs associated with asset revaluations and suggest that those exceed any benefits stemming from the revaluations. This cost-benefit theme is continued by Brown, Izan and Loh, and by Whittred and Chan, both, however, outlining the affirmative case. The latter suggest that asset revaluations are a 'low-cost mechanism for mitigating underinvestment problems induced by the presence of risky debt and exacerbated by the manner in which conventional borrowing limitations are written'. Brown and Loh advocate the use of asset revaluations on different grounds. Specifically, they provide a contracting and political cost explanation and then adduce evidence to support their contentions.

The historical events so well captured by Walker and the consistency over time of the arguments for and against asset revaluations make the papers presented in this forum essential reading for those interested in obtaining a better understanding of accounting policy choice issues in general, and specifically those relating to asset revaluations.

P6268

ABACUS, Vol. 28, No. 1, 1992

R. G. WALKER

The SEC's Ban on Upward Asset Revaluations and the Disclosure of Current Values

Prior to 1930, the upward revaluation of fixed assets was common in the United States. By 1940 the practice was virtually extinct, and for decades thereafter U.S. corporations which were registered with the Securities and Exchange Commission (SEC) have been constrained both from making upward asset revaluations, and from presenting supplementary information about the 'current values' of fixed assets. These changes were effected without the publication of any rules or guidelines by either the SEC or the U.S. accounting profession.

This paper traces the early history of SEC activities and policies in relation to 'write-ups', using primary source materials which include minutes of SEC meetings, internal memoranda prepared by SEC staff, and reports of SEC decisions in stop-order proceedings. These documents show that, initially, SEC staff actively 'discouraged' write-ups through the exercise of administrative discretion in the course of assessing whether documents filed with the Commission were adequate to support the registration of prospectuses or securities. Later, formal decisions to reject the use of 'appraisals' were based on findings that estimates of current values had been arrived at arbitrarily or capriciously. Over a twenty-five-year period no decisions were located which formally rejected write-ups or the disclosure of current values when they were based on defensible estimates of current market prices. However, subsequently these decisions were cited as precedents for the rejection of the use of both 'appraisals' and estimates of market prices as the basis for valuing assets in all financial reports lodged with the SEC. By the 1940s, the SEC was using its registration powers to 'censor' financial statements which referred to estimates of current values, regardless of the evidence used to arrive at those estimates. By the 1950s, the SEC had extended its policy of censorship to prevent any disclosure of estimates of 'current values' — even when those disclosures were only made in 'supplementary' notes in takeover documents.

Key words: Fixed assets; History; Revaluation; Valuation.

One of the distinctive features of corporate financial reporting in the United States is the avoidance of upward asset revaluations and the exclusion of references to the current market values of properties or plant and equipment from financial statements. Yet prior to 1930, formal revaluations were commonly undertaken by U.S. corporations and these adjustments were regarded as appropriate. By 1940 the practice was virtually extinct. In the intervening period, neither the Securities

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and Exchange Commission (SEC) nor the accounting profession issued rules or guidelines directly proscribing write-ups or supplemental disclosures of current values. The change was brought about by the intervention of the SEC's staff, who 'discouraged' both practices through informal administrative procedures.

This paper outlines the manner in which the SEC's ban was put into effect, and traces shifts in the Commission's policies towards write-ups during the 1930s and 1940s. Section 1 reviews the early U.S. literature concerning asset write-ups or the disclosure of current prices or 'appraisal values' in notes accompanying financial statements; this section also considers the incidence of write-ups in the 1920s. Section 2 outlines criticisms of the use of write-ups by public utilities in the late 1920s and early 1930s — criticisms which appear to have reflected the views of at least one of the SEC's founding commissioners, and to have influenced the Commission's policies regarding write-ups. Sections 3 and 4 review the authority of the SEC to regulate accounting, and outline the SEC's first efforts to discourage write-ups or the use of appraisal data. Contrary to common beliefs, the SEC initially permitted the use of write-ups in certain restricted circumstances. But in the late 1930s and early 1940s SEC staff gradually eliminated both the upward revaluation of fixed assets, and the supplementary disclosure in balance sheets and other financial reports of information concerning current market values. Sections 5–9 outline successive phases in the SEC's policies, and suggest factors which appear to have contributed to a hardening of attitudes against the inclusion of 'current values' information in financial statements. The analysis is based in part upon evidence obtained from minutes of SEC meetings, internal memoranda and other unpublished materials.

1. WRITE-UPS AND APPRAISALS IN PRE-SEC ACCOUNTING PRACTICE

Accounting practice in America was virtually unregulated until the 1930s. There were no accounting 'standards' and state corporation laws had virtually nothing to say about corporate reporting (Walker, 1978, pp. 129–33). Accountants turned to texts and technical journals for guidance as to 'best' practice. This literature generally supported the use of cost-based methods of valuing assets and endorsed the proposition that accounting should 'match costs and revenues' rather than reflect the effect of price changes upon the affairs of firms. However, diverse positions were taken by contributors to this literature. Some (notably Esquerre) opposed any departure from cost-based valuations (even the use of the lower-of-cost-or-market for inventories or marketable securities; Esquerre, 1914, pp. 171, 263). Some suggested that 'revaluations' were desirable to check the sufficiency of depreciation practices (e.g., Montgomery, 1909, p. 188; Wade, 1934, p. 268). Some authorities emphasized that balance sheets should disclose the basis of asset valuation — whether cost, depreciated cost, 'appraised replacement cost' or other value — and so implied that write-ups to 'appraised' values or market prices were legitimate (see, e.g., Bell, 1922, p. 42; Bell, 1934, p. 47; Bliss, 1923, p. 212; Federal Reserve Board, 1929; Gilman, 1934, p. 221; Wade, 1934, p. 269; Paton [ed.], 1932, p. 756). Others simply acknowledged that revaluations were undertaken in practice (see, e.g., Couchman, 1924, pp. 39–47; Guthman, 1932, pp. 92–3). Several writers proposed that fixed assets could (or should) be revalued upwards occasionally so that the financial statements did not convey 'misleading' information. (e.g., Dickinson, 1914, p. 81; Kester, 1933, p. 319; Bell, 1934, p. 95). An alternative proposal was that financial statements disclose 'current values' either in parenthetical notes on the balance sheet or elsewhere (e.g. Montgomery, 1913, p. 194; Montgomery, 1934, p. 280; Bell, 1934, p. 456).

During this period, several writers sought to develop theoretical explanations of the accounting process. One outcome of their efforts was the argument that the valuation of assets was intended to reflect the present value of the services or benefits to be derived from using those resources within a business. 'Cost' was said to represent the present value of services at the time of acquisition; depreciation charges were intended to allocate the cost of those services over an asset's useful life. It seems to have been accepted by some authors that the 'value' of services could change, but that the difficulty of estimating values made it unwise to record those changes in the financial statements (see, e.g., Report of the Special Committee, 1932). G. O. May (1943, p. 98) later suggested that practitioners regarded the recording of appreciation as 'permissible' but not 'compulsory'.

Surveys of published financial statements by Fabricant (1936) and Dillon (1979) provide evidence of the incidence of asset write-ups during 1925–34. Fabricant found that 75 per cent of a sample of 208 large industrial firms which were listed in 1934 had recorded upward or downward revaluations during that period: there were 70 write-ups of property, plant and equipment; 7 write-ups of intangibles; and 43 of investments (Fabricant, 1936). While this survey did not examine the methods used to arrive at new valuations, it does indicate that the writing-up of assets occurred, and possibly was a common practice in the years preceding the establishment of the SEC. Dillon later replicated Fabricant's study, reviewing statements filed with the SEC by 110 corporations listed on the New York Stock Exchange. Dillon (1979) found that about one-fourth of these corporations had revalued some of their assets upwards during 1925–34, though more made downward revaluations than upward revaluations in the period 1925–9. 'Large revaluations, relative to total assets, were rare' (p. 12). Dillon noted that not one of the 110 firms had used upward revaluations to increase reported earnings; later, Saito analysed a smaller sample of 1920s upward revaluations in which credits were made to capital accounts, or to offset write-downs of intangibles, or to offset accumulated losses in the 'earned surplus' account (Saito, 1983, pp. 14–19).

Moreover, this evidence conflicts with some popularly encountered comments about U.S. experience with upward revaluations in the 1920s and 1930s. Kohler (1948, p. 134), for example, wrote that: 'the average American businessman knows well the dangers of inflation and of unconservative accounting practices, and... he remembers all too vividly how he wrote his assets up in the '20s and down again in the '30s'. Other writers have also implied that firms which revalued assets upwards were later compelled to write them down (e.g. Daniels, 1934, pp. 27–8; Daniels, June 1934, p. 115; Sanders, 1938, p. 90; Sanders, 1939, pp. 540–1; Kripke, 1941, p. 1187; Edwards and Bell, 1961, p. 185; Werntz, 1963, p. 116). However, Fabricant's evidence suggests that many write-downs involved capitalized intangibles rather than previously revalued durable assets or investments. Indeed, Fabricant (1938, p. 3) reported that the 1920s write-ups of 'property account' were 'surprisingly small', while May (1943, p. 94) suggested that the use of 'appraisal' values had been confined to balance sheet notes or disclosures in the text of prospectuses.

Further insights into the write-up practices of the period may be obtained from the report of a Federal Trade Commission (FTC) investigation of public utilities, and by consideration of the type of financial statements presented to the SEC in its early years.

2. WRITE-UPS BY PUBLIC UTILITIES IN THE 1920s

The procedure used in the regulation of rates charged by railroads and public utilities encouraged the use of 'appraisal' values in corporate financial statements (Sanders, 1935, p. 262). The early leading case on utility regulation — Smyth *v*. Ames (169 US 466) — stated that 'the basis of all calculations as to the reasonableness of rates... must be the fair value of the property being used for the convenience of the public'. The courts came to accept calculations of 'reproduction cost new less depreciation' as appropriate for rate-setting purposes (though some rate-setting bodies placed little weight on these estimates). Judicial acceptance of references to current replacement prices influenced asset valuation practices by the public utilities (May, 1943, p. 96). During periods of rising prices, the application of 'rate of return' price regulation created incentives for the utilities to revalue their assets to replacement values (see Clarke, 1980, p. 82).

In the mid-1920s the high level of concentration in the electricity and gas industries attracted critical attention and the pricing practices of these utilities became a political issue (see de Bedts, 1964, pp. 112ff.). In February 1928 the U.S. Senate directed the FTC to investigate the financial affairs of the utilities.

During the FTC investigation the Insull group collapsed in 1932, and other utilities encountered financial difficulties. The inquiry became protracted and extensive, and eventually produced a massive report of ninety-five volumes. The FTC examined the accounting procedures used to record security issues, reorganizations and inter-company transactions by the major public utility 'groups'. In the electricity industry, investigations were conducted of 18 'top holding companies', 42 sub-holding companies and 91 operating firms. The final report on electricity utilities (Federal Trade Commission, Vol. 72A, 1935) summarized these utilities' 'write-ups' of capital assets as follows:

> Summary of write-ups, improperly capitalized intangibles and inflation included in... capital assets at the final stages of examination...

Top holding companies	Subholding companies	Operating companies	Total
$273,420,165	$353,370,035	$864,231,623	$1,491,021,823
18.3%	23.7%	58.0%	100%

The FTC's report outlined the manner in which these assets had been 'written up':

> [I]n some instances, holding companies have performed construction work for their operating subsidiaries and ... in that performance large profits were taken by some companies which were included in the fixed-capital accounts of the companies for whom the work was performed, and ... there was also erroneously included as an element of construction cost capital stock and bond discounts and excessive and erroneous amounts for overhead expenses and intangibles. (pp. 299–300)

> [U]tility systems have been built up through the acquisitions by holding companies of securities or the properties of operating companies which were transferred to affiliated companies; and that in this process the holding company or other controlling interests have obtained ... large profits, with consequent write-up of the value of the properties or securities transferred. (p. 300)

> When steps were taken to unify companies acquired in the same territory, it had been the practice generally of the controlling interests to write up the value of fixed assets on the books of the merged or consolidated companies; that in most instances these write-ups were injected by the controlling interests, based on nothing more than their optimistic judgement of the values of the properties being unified, or as a result of the so-called properties by their engineering staffs; and that this was often done with a view to capitalizing to the utmost the potential earning power of the properties. (p. 300)

It will be noted that the FTC used the term 'write-up' very broadly to encompass, *inter alia,* the tracing of interest charges to the cost of constructed plant and the recording of properties at the cost at which they were acquired from affiliates. These procedures were the consequence of using cost-based accounting systems and had nothing to do with the use of market prices or appraisals in valuing fixed assets. The preparation of consolidated statements would have eliminated inter-company profits and so would have avoided many of the alleged 'overstatements' of asset values. The FTC's Report (briefly) acknowledged this (p. 302) but its authors were either unable or unwilling to quantify the extent to which their estimates of the aggregate value of asset write-ups incorporated 'profits' from intra-group transactions which would have been eliminated on consolidation. In the case of the Insull group, many of those transactions were undertaken through dummy intermediaries, and so might not have been eliminated (Walker, 1978, p. 327).

The FTC Report focused on the manner in which holding company systems had been developed and financed. The main target of the FTC's criticisms was the use of so-called 'horseback appraisals': casual or arbitrary estimates of the 'present value' of prospective services of equipment or processes. These valuations had little or no regard for current exchange prices.

The FTC's comments on the evils of write-ups may have had some influence on the accounting community. More directly, the FTC's views seem to have been adopted by the staff of the SEC. The connection between FTC attitudes and SEC policies is readily understandable. The Securities Act of 1933 was administered by the FTC until the Securities Exchange Act of 1934 established the Securities and Exchange Commission. For a while, the two bodies shared office space. Some of the SEC's initial staff were recruited from the FTC, and three of the SEC's founding commissioners had some involvement in the FTC's dealings with public utilities.

3. AUTHORITY OF THE SEC TO REGULATE ACCOUNTING

The two securities acts gave the SEC wide powers to regulate corporate disclosure by requiring firms to file registration statements. The 1933 Securities Act required both new and seasoned companies to furnish registration statements as a condition of the distribution of securities; the 1934 Securities Exchange Act made it unlawful for members of stock exchanges or others to effect any transactions in the securities of firms which were not registered with the Commission. In either case, the constitutional authority of the SEC arose from federal jurisdiction over the use of mails or means of interstate commerce. The SEC was also empowered to impose sanctions on those disseminating untrue or misleading information. The statutes required the publication of financial statements but left the SEC to prescribe the form and content of those statements, and the accounting rules which were to be used in their preparation.

In 1935 the Commission's responsibilities were extended with the passage of the (Public Utility) Holding Company Act, which required the Commission to specify the accounting methods to be used by public utility holding companies and their subsidiaries, and to pass judgment upon reorganization proposals. The SEC's responsibilities were further extended by the 1940 Investment Companies Act, which included clauses prescribing methods of valuation of certain assets, and required disclosure of the current market value of portfolios of securities. These requirements for the use of market price data do not appear to have troubled SEC staff or Commissioners or to have influenced their thinking about asset valuation issues in the context of the securities acts.

4. 'DISCOURAGEMENT' OF WRITE-UPS BY THE DESIGN OF FORMS

The newly formed SEC was faced with the task of preparing registration procedures for firms whose securities were traded, and with managing the process of registration of new offerings (handed on to it from the FTC).

The FTC's initial efforts at administering the 1933 Act led to hostility from the business community. The FTC had devised Form A-1 as the vehicle for firms seeking registration of proposed security issues, and this document required extensive and detailed disclosures. Some members of the accounting profession feared that Form A-1 might be the first step by government to prescribe uniform systems of reports (Previts and Merino, 1979, p. 244). Others criticized Form A-1 as 'inelastic' and as unsuitable for industrial concerns (Stewart, 1938, p. 137).

As the FTC before it had done, the SEC adopted a (formal) strategy of standardizing disclosure without attempting to prescribe accounting methods. The accounting profession had taken little part in the 1932–3 debate over the content of the securities acts, but by 1934 it was anxious to discourage the SEC from requiring uniformity in accounting practice. On the SEC's side, two of the five Commissioners had developed strong views about the need for some regulation of accounting practices. May (1943, p. 95) later recalled that in 1933 one of the

FTC commissioners (presumably Mathews) had 'dilated on the necessity for stringent rules against the vice of write-ups'.

But undoubtedly the most outspoken critic of 'write-ups' was 'Judge' Healy, who had left the Supreme Court of Vermont to head the FTC's investigation of public utilities, and later became a foundation commissioner of the SEC. Healy was reported to have been 'shocked' by his experience in those investigations (Seligman, 1982, p. 108). In April 1934 Healy gave evidence in hearings of the U.S. Senate Committee on Banking and Currency, 73rd Congress. There he estimated that the FTC investigation had revealed over $1,150,000,000 in write-ups, many of which had been entirely arbitrary; at the same time asset values had been manipulated by sale and repurchase at a higher price from 'dummy intermediaries' (April 1934, p. 7594). Healy was reported to have observed that 'you can capitalize in some States practically everything except the furnace ashes in the basement' (Seligman, 1982, p. 108).

The extent to which the SEC would develop rules to restrict 'the vice of write-ups' was to become a source of much disagreement around 1937–8.

Meantime, one of the first actions of the SEC was to register stock exchanges, and to extend temporary registration to firms listed on those exchanges until 1 July 1935. The SEC commissioned the design of new forms, of which the most important were labelled Form 10 and Form A-2. The disclosure requirements embodied in these forms and accompanying instruction constituted a first step towards the elimination of asset write-ups from U.S. accounting practice.

Form 10 was to be filed by listed corporations seeking to 'register' and so remain listed after 1 July 1935 in terms of the 1934 Act. Form A-1 and the new Form A-2 were to be respectively filed by new and 'seasoned' firms seeking to issue new securities in terms of the 1933 Act. The requirements for 'seasoned' firms were less onerous than those imposed by the FTC, and had been developed after discussions with members of the legal and accounting professions, representatives of the stock exchanges, and corporate executives (Mathews, 1935, p. 2). It was reported that Form A-2 was well received (Stewart, 1938, p. 137). Form 10 was described as 'the basic form'; Form A-2 was modelled upon it, 'deviating only where the need for providing different and additional information for new security issues has called for such change' (Landis, 1935, p. 19). Both required the disclosure of financial and non-financial information. Form 10 required the filing of financial statements, together with answers to thirty-three questions concerning the securities being registered, the firm's capital structure, and the control and management of the corporation. Form A-2 required presentation of the most recent set of annual financial statements, together with particulars of certain previously used accounting procedures — notably particulars of 'substantial revaluations' together with details of the treatment of amounts added or subtracted by write-ups or write-downs.

In outlining the new requirements to a meeting of accountants, SEC Chairman Landis emphasized that the Commission was not laying down hard and fast rules: 'flexibility is the rule' (Landis, 1935, p. 21). Similarly, T. H. Sanders of Harvard University (who had been engaged as a consultant to the SEC in the development of new forms) emphasized that the Commission's regulations permitted considerable 'freedom of choice' in the selection of accounting procedures. Sanders (1936, p. 69) explained that, so far as asset valuation was concerned, the only requirement was 'that the basis of arriving at the amounts of values shown shall be stated, but in no case is a specific basis prescribed'. Yet, despite the 'flexibility' to be afforded accountants, the new forms contained a clear signal that the SEC disapproved of asset write-ups in connection with 'property accounting'. Sanders explained that the Commission had, 'by the language of its regulations, lent support to the view...that it is not the business of accountants to reflect the "value" of the properties and plant':

> To those not primarily trained in accounting the discussions of value and valuation have always been confusing. The commission has at least refrained from adding to this confusion when it speaks primarily of the balances in the property accounts, additions and subtractions at cost, and does not use the word 'value'. Thus the emphasis is laid upon changes in the amount of property resulting from expenditure and retirements during the year. Which are the important matters, and not upon the 'value' of the whole property. (p. 72)

The following year the Commission added to the difficulties facing corporations who wished to revalue assets upwards. Rule KA7 under the 1934 Act required registrants to lodge 'a current report on the appropriate form' in the event of certain changes in, for example, a firm's capital structure, the security available for debt issues — and in the event of a substantial revaluation of the assets of the registrant. Thus, if a corporation was to retain registration it would be necessary for it to satisfy the Commission that the explanations of asset revaluations contained in these 'current reports' were adequate.

5. ADMINISTRATIVE REVIEW OF REGISTRATION STATEMENTS

Documents filed with the SEC were reviewed by examiners, who assessed whether they constituted adequate disclosure. The formal situation was that if the Commission did not take out a stop-order, a firm would obtain registration of a proposed security issue, or retain its registration in terms of the 1934 Act, within twenty days of the date of filing documents required by the Commission. In practice, the staff of the Commission had considerable administrative discretion. Registrants could be advised in a Letter of Deficiencies that the documents they had submitted did not meet the SEC's requirements and that additional or corrected information would have to be furnished before their applications could proceed. The filing of amended information established a new filing date unless the Commission consented to the filing of the amendment as part of the original statement. A series of Deficiency Letters could produce ongoing delays and expense. If a registrant was dissatisfied with the position taken in a Letter of Deficiency and was unable to persuade the Commission's staff to accept his point of view, then he could decline to amend the documents and so invite the Commission to issue a stop-order to prevent registration becoming effective. But such an action would involve him in expense, and further delay, and possibly in exposure to public criticism. As A. A. Berle

Jr suggested (1938, p. 12), no businessman was anxious to submit himself to this process 'to determine whether or not he is about to commit a fraud'. Hence registrants might attempt to negotiate with the SEC, or would simply amend their financial statements. Berle concluded that under the SEC's jurisdiction, 'most questions of accounting are settled by the star-chamber process, and chiefly by sub-examiners'. Sanders (1939, p. 542) told an English audience that the SEC had become 'the censor' of American financial and accounting practices.

The minutes of SEC meetings show how the Commission handled registration applications from firms whose financial statements incorporated asset revaluations, and how the SEC began to eliminate write-ups from U.S. accounting. Some of the first matters to be considered involved new flotations in which promoters had listed plant, equipment, ore reserves or intangibles at appraisal values. In its *First Annual Report* (1935, p. 26) the Commission noted that the examination of registration statements 'requires the services of... mining engineers, petroleum engineers and other persons expert in the fields relating to the issuance of securities'. Initially the Commission engaged consultants to investigate these appraisals; later it employed its own engineers to undertake on-site inspections of properties (Smith, 1935, p. 326). The fact that the SEC adopted this staffing policy is in itself evidence that the Commission initially accepted the propriety of reporting engineering appraisals in registration statements.

The SEC came to rely on 'in-house' administrative processes to secure changes in accounting practices without publicity and without confrontation with business interests or the accounting profession. This policy seems to have been formed when the Commission considered a registration application from the Northern States Power Company.

In 1924 and 1927 Northern States and its subsidiaries had revalued assets to figures representing the reproduction cost of new properties, and correspondingly had recorded a 'capital surplus'. Subsequently, unamortized debt discount had been charged against this surplus rather than against income. It was one of the practices which had been strongly criticized in the FTC's 1935 final report on public utilities. Healy wanted to eliminate those practices. The Commission debated the matter on no less than six occasions over October–November 1934. After several discussions 'at length', it was resolved that Northern States

> should not be required to change its balance sheet, but instead to set forth in footnotes the fact that the results shown in the balance sheet would not be the same if other accounting procedures had been followed, and to set forth a summary of the results that would have been obtained had the other accounting procedure been invoked. (SEC Minutes, 1 November 1934)

The vote was 3 to 2 — Kennedy, Mathews and Landis in favour, Healy and Pecora against. Commissioners had reserved the right to set forth in the SEC's minutes the reasons for their votes. On this occasion, they did not. But later, Healy continued the argument:

> Judge Healy offered a motion that the Commission institute proceedings upon the registration of the Northern States Power Company, giving notice and opportunity for

> hearing, to determine whether the statement shall be allowed to become effective or whether a stop order shall issue. (SEC Minutes, 8 November 1934)

This motion was also defeated, 3 to 2. Finally, on 19 November 1934, a majority of the Commission permitted Northern States' registration to take effect. Healy had lost; later he recalled his disappointment that the Commission did not 'attack' the registration statements:

> All the commissioners disapproved the accounting. The majority believed that there was such a complete disclosure in the statement, as to comply with the statute and make a stop order proceeding improvident, and further, that the accountants' certificate had in effect, condemned the accounting. The minority took the view that the accountants had expressed no clear opinion as to whether the accounting was good or bad, that the company's earnings record and earned surplus balance as stated in the registration were in effect untrue — amounted to misrepresentations and therefore were violations of the statute. (Healy, 1938, p. 3)

Another indication of the direction of SEC administrative policies in relation to accounting matters is provided by reports of the Commission's deliberations prior to the issue of registration forms. Drafts of the forms had been submitted to the SEC; Mathews obtained agreement on the desirability of requiring 'a review of the surplus account' (SEC Minutes, 8 December 1934). This would have ensured disclosure of how much of shareholders' funds represented subscribed capital, undistributed profits and other items. Accordingly, a proposal was drafted to require registrants to provide 'a ten-year survey of the surplus account, and a summary of the account, by classes'.

It was agreed that the proposal be submitted for comment to J. M. B. Hoxsey (of the New York Stock Exchange), a committee of the American Institute, and several corporate executives (SEC Minutes, 12 December 1934). The responses of the American Institute were not recorded, but it appears that the Commission placed most weight on the opinions of its own contacts in the business community. Hoxsey and a group of executives were invited to Washington to discuss the proposals. After two successive meetings the Commission seems to have engaged in heated debate over whether they should persevere with the proposal to require a ten-year summary of movements in the surplus accounts. In what appears to have been an unprecedented step the Commissioners recorded formal statements as to their position in the Minutes. Landis stated that without the requirement the Commission would still secure disclosure of '90% of the information' they were seeking, but believed that obtaining the additional 10 per cent might create such an additional burden as to 'drive corporations off the exchanges'. Pecora feared 'a storm of protest'. Healy argued that the Commission had only obtained the opinions of accountants who 'have been so long in the employ of some of these corporations that their views are not better than other. I think that they are dependent accountants, special pleaders, rather than independent accountants.' He further argued that by not requiring a full history of the surplus account the Commission would be 'retarding the cause of good accountancy in the United States'. Mathews suggested a compromise: information about changes in surplus accounts would be recorded in audit reports. But both Healy's and Mathew's proposals were lost after Kennedy agreed with Pecora that any changes would incite protest. The matter was re-debated on 8 January 1936, with Mathews and Healy again being outvoted.

Yet, while the Commission refused to issue a formal rule requiring a summary of movements in capital surplus accounts, it later achieved the same result by issuing deficiency letters whenever a firm with revalued assets had failed to provide the full history of the entries associated with the write-ups. In any case, the Commission had no qualms about imposing stringent rules on public utilities, requiring them to provide particulars of all write-ups and movements in surplus accounts since the 1920s.

Meantime, while the SEC continued to foster the *appearance* of flexibility and non-intervention into technical issues of accounting (see, e.g., Landis, 1935, p. 28), it continued to discourage the use of appraisals and write-ups. A few cases were formally considered by the Commission, and in these the corporations involved were required to provide fuller information about 'appraisals'. For example, when Willys-Overland Motors, Inc. sought to file a balance sheet which reflected a fixed asset valuation of approximately $11,000,000, based upon an appraisal, the Commission resolved that the registration statement should be amended so as to disclose fully the 'engineering methods used in arriving at the $11,000,000 appraisal', and the relationship between this appraisal and an earlier estimate of asset values of $3,900,000 made on a 'liquidating basis' (SEC Minutes, 19 February 1939).

However, it seems likely that many other attempts to incorporate asset revaluations in financial statements were deterred at an administrative level, without reference to the Commission. Two staff members later recalled that in these early years there were a series of 'informal cases' involving write-ups in which the SEC 'usually effected the elimination of the appraisal' (Barr and Koch, 1959, pp. 181–2).

6. DECISIONS OF THE SEC IN STOP-ORDER PROCEEDINGS

While SEC 'censorship' gradually reduced the incidence of asset write-ups, there were still occasions during the 1930s and 1940s when write-ups were permitted. Moreover, SEC decisions in stop-order procedings during the 1930s produced clear-cut statements that the Commission accepted the use of write-ups and the disclosure of current values.

SEC commissioners frequently emphasized that the SEC did not pass judgment on the merits of securities, but simply sought to ensure that the investing public was furnished with an adequate supply of information with which to make informed decisions.

In practice, the SEC did not confine its activities to passively reviewing material placed before it. When managers found that their registration statements were not acceptable to the Commission they would seek to amend those documents until they were acceptable. But despite the willingness of prospective registrants to submit amended data, the Commission often instituted stop-order hearings to expose managers or promoters to public criticism. At times, it called for hearings even though registrants had already lodged amended documents. The Commission even insisted upon public hearings when registrants sought to withdraw their applications.

In the 1960s SEC staff prepared an index to SEC decisions on accounting matters in the first forty volumes of the Commission's Decisions and Reports for the period July 1934–May 1962. The index referred to thirty-nine decisions involving 'appraisals' or the recording of asset 'appreciation': a summary of the issues addressed in these cases is provided in the Appendix to this paper. With one exception (1 SEC 299 — an action taken under the Public Utility Holding Company Act of 1935), all of the cases cited were proceedings undertaken in terms of the 1933 Securities Act and concerned proposals for the registration of new security issues. None of the cases related to disclosures in annual accounts or annual reports.

Many of these thirty-nine cases concerned valuations which were unquestionably dubious. For example, some promoters had presented documents attributing substantial values to items of equipment which were no longer owned. Some mining firms placed high values on abandoned mine shafts which had caved in or were filled with water; others incorporated definite statements about the worth of ore reserves which had not been systematically sampled and evaluated. In one case (1 SEC 217) the value of ore reserves had been estimated on the basis of evidence obtained from a 'doodle bug'. Promoters of a whiskey distillery placed a high value on 'water rights' from a creek adjacent to the still, and calculated that value by reference to the cost of obtaining water through connection to the town supply.

Many of these cases were later cited as instances of SEC consideration of the use of 'appraisals' and 'write-ups' (Barr and Koch, 1959, p. 181). Certainly the terms 'appraisal', 'appreciation' and 'write-up' were used in the reports. But most of the cases had little to do with the procedures which accountants in the 1990s would associate with references to asset *revaluations*. The term 'appraisal' was variously used to refer to assessments of so-called 'sound values', 'replacement cost new less depreciation' or to 'liquidation' values (see, e.g., Saliers, 1939, pp. 169–70; Olson, 1939). The term was also used to refer to the product of 'present value' calculations. No case was noted in which the SEC rejected the reporting of estimates of the current selling prices of assets. Indeed, in several instances the Commission challenged the validity of appraisals which had been made without adequate regard for current market resale prices (see, e.g., 1 SEC 54; 1 SEC 701; 6 SEC 926). The rejections of appraisals based on replacement prices was based on the inadequacy of the evidence about replacement prices, rather than on the use of that method of valuation.

Furthermore (as in the 1920s), many of these appraisals were not brought to account in financial statements, but were only disclosed as descriptions of the value of ore reserves of other properties within prospectus registration statements. The SEC decisions did not condemn this form of disclosure *per se*; rather, the Commission held that the specific disclosures were misleading (usually because appraisals had been undertaken in an arbitrary fashion). On several occasions the Commission emphasized that valuation procedures should discount expected future returns to present values (e.g., 2 SEC 209; 2 SEC 329) and in at least one case (4 SEC 347) it called in experts who testified that a firm which offered present value calculations had used an inappropriately low discount rate.

Montgomery later summarized the SEC's attitude, as reflected in these stop-order proceedings, as follows: an appraisal must be more than an arbitrary determination and must be based on scientific method; and there must be a fair and accurate application of the methods purported to be followed (Montgomery, 1940, p. 239).

However, in 1939 the SEC, possibly in response to suggestions by Smith (1935), avoided some of these difficulties by introducing a new Form A-O-1 for mining corporations. This form did not require the reporting of the 'value' of mining prospects in registration statements; Werntz (January 1940, p. 24) described it as 'an attempt... to overcome the misleading effect of financial statements of [wildcat schemes]'. Subsequently, a few stragglers attempted to incorporate 'appraisal' values in their registration statements (and hence in their prospectuses), but the SEC moved to eliminate this practice through stop-order hearings (see 8 SEC 172; 10 SEC 358; 15 SEC 20).

7. FORMULATION OF A POLICY FOR REGULATING ACCOUNTING

Initially the Commission recognized that it would be impracticable to attempt to prescribe uniform accounting rules for all American corporations. Hence its public intervention into accounting matters was mainly concerned with the extent of *disclosure* in registration statements. The Commission left the accounting profession to handle technical problems concerning the content of financial reports. Disputes within the Commission about the desirability of requiring extensive disclosures centred on the political hazards of such a step at a time when the Democratic administration was being criticized for retarding economic recovery through onerous regulations (Parish, 1970, p. 198).

By 1937 the Commission changed direction and resolved to commence regulating not only the *form* but also the *content* of financial statements. In formulating this new policy, key roles were played by Commissioners Douglas and Healy, and by Chief Accountant Carman G. Blough.

SEC historian Joel Seligman has suggested that it was chairman Douglas who pushed the Commission to take a more proactive approach to accounting issues:

> While an SEC commissioner, William Douglas had disagreed with the Kennedy–Landis policy of leaving the promulgation of accounting principles almost entirely to the accounting profession. In 1936 and 1937 Douglas and fellow commissioner Robert Healy pressed the Commission to 'take the lead in formulating accounting principles as it was empowered to do under the 1933 Act'. Douglas was the first chairman to challenge the laxness of the Commission's accounting policies, raising appropriate questions for SEC internal study and modestly reforming the Commission's accounting policies. (Seligman, 1982, pp. 197–8)

Carman Blough held different views about the Commission's role. Blough joined the SEC in September 1934 as a security analyst. Six months later he became Assistant Director of the Registration Division. In November 1935 he was appointed to the newly created post of Chief Accountant.

Blough's approach to technical problems was cautious. He regarded the development of accounting principles as the responsibility of the profession, not the SEC. Blough was a former academic (Coffman, 1989, p. 7), and took pains to review the technical literature and consult academics about issues which arose in the consideration of registration documents. On the public platform Blough was prepared to acknowledge that the SEC did in fact exercise its authority when evaluating financial statements. Whereas in 1935 Landis had claimed that the SEC was 'flexible' and permitted the use of a variety of accounting techniques provided there was adequate disclosure, Blough stated that the Commission studied financial statements 'to determine whether the methods followed in their preparation are generally recognized, and if not, to cause the statements to be amended in accordance with generally accepted principles' (Blough, April 1937, p. 4). Blough admitted to doubts about the meaning of the concept of 'general acceptance' but was prepared to regard as 'generally accepted' any views about which there was substantial authoritative support.

In 1937 the Commission had come to accept that its policy of relying on the accounting profession to make progress in the development of accounting rules had failed. The preparation of Accounting Series Releases (ASRs) was described by SEC insiders as a response to that failure (Werntz, April 1939, p. 3; Cavanaugh, 1941).

ASR 1 began as a routine item of business at Commission meetings attended by only Landis and Mathews. The Commission approved a proposed letter to a corporation indicating that write-downs of plant and equipment should be charged against earned rather than capital surplus. Further, the Commission 'further authorized the publication of the letter' (SEC Minutes, 30 March 1937). When published, the letter was accompanied by a preamble promising a series of pronouncements on accounting matters.

Blough later expressed embarrassment about this promise and confided that the foreword had been prepared and published in his absence (Blough, 1938, p. 189).

Blough may have been 'embarrassed' by ASR 1, but later (as he acknowledged) he was criticised within the Commission for not issuing more releases (Blough, 1938, p. 189). Blough wanted to proceed slowly; Healy, in particular, wanted to proceed speedily. Speaking to an American Accounting Association meeting in December 1937, Healy (1938) expressed regret that the Commission had not taken a stronger stance in dealing with Northern States and other public utilities, and announced that the Commission was investigating the feasibility of introducing more accounting rules.

Around the time there were several changes in the membership of the SEC (see Kaplan and Reaugh, 1939, p. 224). The reconstituted commission then directed the Chief Accountant and the Director of the Registration Division to prepare a joint recommendation 'as to the manner in which decisions on accounting principles rendered in connection with stop-order opinions might receive wider publicity' (SEC Minutes, 4 January 1938). Predictably they responded that decisions could be publicised through ASRs (SEC Minutes, 15 January 1938). The Commission resolved that Mathews would review the topics of possible releases. Later, a Special Staff

Committee on Accounting was formed 'to study and make recommendations on the subject of accounting rules, opinions and publicity'. On receiving this report, the Commission directed that 'the Chief Accountant should begin work immediately' to prepare opinions 'on accounting principles which are the subject of controversy'. Further, it was 'determined that at least two accountants should be assigned, to the Chief Accountant, with instructions that their activities should be confined to studies preliminary to the announcement of opinions'. Clearly, Blough's policy of relying on the profession to resolve controversial issues had been rejected. The same meeting also considered a recommendation from the Special Staff Committee that the Commission announce by public release

> that financial statements not prepared in accordance with generally accepted accounting practices will be deemed to be misleading despite disclosures contained in footnotes thereto or in the accountant's certificate, and that the principle of disclosure will be accepted in lieu of corrected statements only in cases where the points involved are such that there is no substantial majority opinion as to the proper treatment thereof. (SEC Minutes, 25 March 1938)

No formal action was taken at that time, the Committee being directed to resubmit the proposal in the form of a draft Release for later consideration. ASR 4 was drafted accordingly, and published in April 1938.

The publication of ASR 4 has been regarded as a 'path-breaking precedent' (Previts, 1978, p. 84) — though the nature of that precedent might seem problematic. On the one hand, several SEC staff claimed that the publication of ASR 4 showed that the SEC had resolved to require firms to use accounting methods which were accorded substantial authoritative support (Kaplan and Reaugh, 1939, pp. 224–5; King, 1950, p. 35). On the other hand, publication of ASR 4 was said to signify the SEC's decision to abandon the determination of accounting rules 'except as a last resort', and to rely on the 'private sector' to establish accounting rules (Chatov, 1975, pp. 104–9; Moran and Previts, 1984, p. 69). Indeed, it has been claimed that ASR 4 'formalized' the Commission's decision to 'delegate' to the American Institute of Accountants (Committe, 1990, p. 155).

Neither of these interpretations is consistent with the evidence available from minutes of SEC meetings or other sources. Those minutes make plain that in 1938 the SEC had no intention to 'delegate' its authority to the profession. ASR 4 was only intended to be a stopgap, pending the preparation of a series of Releases prescribing accounting treatments. Rather, the Commission was planning to play a dominant role in the standard-setting process. Indeed, it was later suggested that in 1938 the Commission had instructed Blough to prepare statements of accounting principles dealing with the issues faced within particular industries (Zeff, 1972, p. 131).

The SEC Minutes report little more about the preparation of the planned series of ASRs on controversial issues. Andrew Barr was recruited in March 1938; a second 'research accountant' assigned to the task of preparing statements of accounting principles was R. F. Graham, already an SEC staff member.

There is no record of an overall plan of action coming to the Commission from the Chief Accountant's office — or vice versa. An internal memorandum from

Graham to Blough refers to a directive from chairman Douglas that a report be prepared on asset revaluations. A report on this subject (evidently prepared by Graham) and a companion report on the treatment of surpluses arising from revaluations (author unidentified) were forwarded by Blough to Douglas in May 1938. The report on the treatment of surpluses claimed that fixed assets 'as a general rule' should be stated at historical cost, with depreciation, depletion and obsolescence shown as deductions therefrom. The report added that appraisal values, 'if expressed at all, should be expressed in financial statements as parenthetical notations or memoranda only'.

Graham's study of 'the appraisal or valuation of fixed assets' concluded that newly established enterprises were not 'justified' in reporting assets at 'value to a going concern', 'present value' or any amount in excess of cost. Similarly, ongoing corporations were not justified in representing recently acquired assets at figures above cost. Ongoing firms with assets held for many years were not justified in writing up those assets 'if the enterprise, on the basis of its past record, is unable to operate profitably after absorbing charges for depreciation, depletion or amortization based on the appraisal value of such assets'. As for long-established and profitable firms, Graham concluded that while the use of appraisals 'may be justified from an economic viewpoint, the weight of accounting authority recommends, as a general rule, the use of historical cost as a basis of valuation in financial statements'. Graham concluded that the use of replacement or reproduction costs might be justifiable for firms which could not trace original cost data, or in mergers where a substantial change in ownership had occurred.

ASR 8 constituted a clear signal that the Commission looked critically at write-ups. After Healy had returned from a meeting of the American Accounting Association, he told his fellow commissioners that he had received complaints about the lack of publicity concerning SEC determinations which had not culminated in stop-order proceedings — and he cited as an example the Shawnee Pottery Company case (SEC Minutes, 4 January 1938). Subsequently the Commission approved publication of ASR 8, *Appraised Values of Properties in Promotional Enterprises*, which cited the facts of the Shawnee Pottery case: an industrial company which filed a balance sheet showing property, plant and equipment acquired for $200,000 at the figure of $720,043 was required to amend its balance sheet to eliminate the surplus of $520,043 carried as 'surplus arising from revaluation of property', and to restate fixed assets back to 'cost' (SEC Minutes, 19 May 1938).

Blough appears to have disagreed with the SEC's new policy of intervention in accounting matters. At a conference on 31 May 1938 he asserted that 'accounting principles and procedures' developed by SEC staff could not possibly be 'as sound' as those which could be developed by representatives of the practising profession (Blough, June 1938, p. 8). In June 1938 he left the Commission to take up employment with Arthur Anderson & Co.

During his term of office, Blough had placed considerable weight on the views of accounting authorities, and he could not have ignored the fact that (despite SEC 'censorship') many leading accounting writers continued to support the writing-up of assets to reflect changes in market prices.

Blough later recalled that there were at least two instances of write-ups being approved between 1934 and 1938, and that one of these involved a public utility (personal correspondence, Blough to S. Zeff, 1974). Presumably he was referring to Montana Dakota Utilities Co. (1 SEC 299, March 1936) which successfully sought to revalue its natural gas reserves. Other instances of upward revaluations which had been accepted by the SEC can be located in a four-volume summary of the financial reports of 1,106 SEC registrants over the period 1936–42, *Data on Profits and Operations* (SEC, 1944). The condensed financial reports occasionally included notes which indicated (for example) that depreciation charges included 'depreciation on appreciation'. In some instances the dates of these appraisals were reported, but in many other instances they were not. Of the instances of revaluations in which the year of write-up was noted, only two postdated the establishment of the SEC: a 1936 increase in the value of 'fixed asset accounts' following an appraisal (SEC, 1944, Vol. I, p. 47), and a 1939 revaluation of 'physical properties' (SEC, 1944, Vol. II, p. 247).

Blough may not have condemned all write-ups, but it is clear that the 'censorship' practised elsewhere in the SEC by the Registration Division, and the evident antipathy of some Commissioners and staff to all forms of 'write-ups', had a profound effect on accounting practice.

8. HARDENING OF POLICY AGAINST WRITE-UPS

Blough's post of Chief Accountant was filled by William W. Werntz, who had joined the SEC as an attorney and had transferred to the Registration Division in January 1937.

After Werntz's appointment, the Commission's plans to issue releases on controversial issues lost momentum. King later recalled that the SEC's plans to produce accounting rules were not carried out 'principally because of the enormity of the task and the lack of staff' (Zeff, 1972, p. 133). The SEC's staff would have been busily occupied with a number of projects and cases during 1938–9. These included the development of Regulation S-X (which harmonized registration requirements under the 1933 and 1934 acts) and litigation in the Transamerica and McKesson–Robbins cases. Staff losses included Graham, who joined Blough at Arthur Anderson & Co. (Blough, 1941, p. 39).

Werntz's first major contribution to the SEC's publications on accounting topics was a draft on the 'balance sheet presentation of preferred or other senior classes of stock having involuntary liquidation values in excess of par or stated values' (SEC Minutes, 20 July 1938). After revision this paper was issued as ASR 9 on 31 March 1939 — a delay of nine months after the last release.

The SEC's 1938 hopes of producing a body of accounting rules seemed to be fading. Kripke, a former SEC attorney, later referred to his involvement around 1941 in a working party established to consider the measurement of fixed assets (Kripke, 1970, p. 1189). Yet no rule on that subject ever appeared.

The reason for the non-appearance of any formal regulation or accounting release on asset revaluations is unclear, but may be attributable to a number of factors.

First, changes in membership of the Commission may have reduced the level of interest in promoting SEC intervention in accounting matters. Mathews resigned from the Commission in 1940 to accept a post with Northern States Power Co. (de Bedts, 1964, p. 103) — the public utility whose financial statements had been the subject of dispute in 1934. Mathews and Healy had been the only Commissioners with continuity of membership since 1934, and the remaining three posts had been filled by nine men during the first five years of the SEC's existence; and Mathews had been the only Commissioner with any accounting training. Of the other Commissioners, only the lawyers Landis and Douglas seem to have displayed any great interest in accounting matters, so that by 1940 Healy may have been without allies. Healy remained a member of the Commission until his death in November 1964; however, after 1940 his public speechese concentrated on the regulation of public utilities.

Second, the case for banning asset revaluations was not unequivocal. Memoranda prepared within the Chief Accountant's office noted that many accounting authorities recognized that appraisals might, in certain instances, be justified (Graham, 16 April 1937). Later, SEC staff accountants wanted to ban write-ups, but also wanted to permit the use of appraisals in mergers, or when cost-based data was unavailable.

Third, other regulatory or quasi-regulatory developments may have been regarded as lessening the need for rules governing write-ups. Accounting Series Releases 8 and 15 concerned the use of appraisals by firms in the promotional stages and by firms undergoing quasi-reorganizations respectively. Form A-O-1 prevented mining firms from using appraisal values of ore reserves and other mining properties. In 1940 the Federal Power Commission had required all utilities to report asset values at cost or cost-based figures.

Fourth, the SEC may have been reluctant to issue a rule which conflicted with state corporation laws. When Werntz was an attorney in the Registration Division he had reviewed state laws concerning the 'valuations' undertaken by newly formed corporations, and in an internal memorandum concluded that, in some states, directors were 'obliged' to assess the value of properties exchanged for stock and to record those transactions accordingly.

Finally, the SEC had been able effectively to 'eliminate' appraisals by administrative processes, and may not have perceived the need for a formal rule. William O. Douglas (who became SEC chairman on 21 September 1937 and held that post until 16 April 1939, when he resigned to join he U.S. Supreme Court) had expressed a definite preference for reliance on administrative procedures in determining Commission policies in relation to emerging issues;

> The virtue of the administrative process is its ability to deal with technical, debatable, indefinable or imponderable matters in a discretionary manner. It provides a realistic and sound alternative to hard and inflexible rules which proceed on the false assumption that right or wrong, black or white, constitute the only choice, but beyond that it permits of action not only case by case but by rules. A rule can be expanded, contracted or repealed in light of changed conditions or new experience. (as cited in Werntz, January 1939, p. 509)

This approach may have been regarded as preferable or sufficient (especially given other demands on staff time).

It seems that the policy of banning write-ups became firmly entrenched during Werntz's term of office as Chief Accountant. Soon after his appointment, Werntz told a professional audience that the Commission had been undertaking an extensive study of the 'the present practices and principles followed in reflecting changes in the carrying values of properties'. While the conclusions of this were not yet available, Werntz was confident that solutions would be found from a study of precedents:

> In the meantime individual cases are largely disposed of at the conference table. But the seeds of future rules are sown. As the issues become clarified and the results of various methods are revealed in subsequent annual reports, other [Accounting Series] releases may be expected to appear, dealing with particular parts of the problem or clarifying certain of the principles. (Werntz, 1938, p. 6)

This legalistic concern appears to have led Werntz to take the position that write-ups were only appropriate in cases of mineral discoveries or in the context of quasi-reorganization schemes; these were situations in which formal decisions had been taken by the SEC through stop-order proceedings or through the issue of ASRs.

Yet, initially at least, Werntz was careful to avoid an interpretation that the Commission was flatly opposd to the use of 'appraisals' in every circumstance. When describing instances in which the SEC had eradicated write-ups (such as the matters described in ASR 8), he explained that 'it is of particular importance to this instance to note that the company was in the promotional stage and had no record of earnings' (Werntz, January 1939, p. 501). He suggested that the 1933 Securities Act implied that cost should be used as the method of asset valuation (p. 502). He did not immediately argue, however, that this implication should be automatically adopted. Indeed, he observed: 'in the case of enterprises having some financial history the entry of sound appraisal values has not ordinarily been questioned, although not infrequently the method of arriving at appraisal values has been made the subject of attack' (p. 502). Werntz explained that the Commission's staff had been undertaking 'an extensive study of the present practice and principles followed in reflecting changes in the carrying values of property':

> We have sought to find answers to such questions as these: Should the higher amounts be entered in the books or displayed only as a collateral notation? Is accounting at cost inconsistent with determination of sales prices on the basis of present replacement cost? Does the carrying of assets at amounts higher than cost infer the intention to estimate profitableness of operation on the basis of such higher amounts, or at least to earmark permanently any revaluation surplus involved? Or is a requirement of disclosure sufficient? (p. 502)

The following year Werntz explained that his personal view was that he did not believe 'that any sound purpose' was served by upward revaluations of assets of 'the ordinary going concern' (Werntz, June 1940, p. 522).

P6268

Whatever Werntz's own views, he appears to have been loyal to the process of ensuring consistency with precedent — as established in deliberations of the Commission or its staff.

In 1939 SEC staff were devoting considerable attention to compelling corporations which had previously written-up assets to charge 'depreciation' on 'appreciation'. It was argued that write-ups must reflect an increased value of expected future services — and hence the increased value of those services should be amortized against revenues over their expected useful life (Werntz, January 1939, pp. 501–3). The possibility that write-ups of real estate or marketable securities might reflect changes in exchange prices does not appear to have been canvassed. In 1940 the American Institute issued Accounting Research Bulletin 5 on the depreciation issue. The need for authoritative guidance on the treatment of depreciation on appreciation seems to imply some continuing support for write-ups; indeed, the American Institute surveyed 500 published balance sheets in 1938, and found in them 562 property items, of which 135 were said to be at appraisal or revised valuations (Weston, 1953, p. 486). Many of those may have predated the establishment of the SEC. It appears that the SEC had virtually eliminated write-ups from the accounting practices of its registrants by the mid-1940s.

9. BANS ON SUPPLEMENTARY DISCLOSURES OF 'CURRENT VALUES'

The next expression of the SEC's antipathy to asset write-ups was the extension of its ban to the supplementary disclosure of information about 'current values' — a form of censorship which encompassed not only registration statements and annual reports, but also documents filed during takeover contests.

In preparing this paper, access to SEC Minutes was sought and obtained for the period 1934–42. Hence the account of this phase of the SEC's policies is based on materials other than the Minutes.

Werntz remained Chief Accountant until 1947; his post was filled by Earle C. King , a long-term SEC staff member who had been appointed on the same day as Blough. By the time of Werntz's departure, the policy of prohibiting write-ups was both accepted and unquestioned. King's main publications in the technical literature reiterated arguments advanced previously by Healy, Mathews or Werntz. Whereas Werntz had suggested in 1939 that (at least in some cases) promotional companies could disclose the 'appraisal values' of assets by way of footnotes (Werntz, 1986, pp. 165–6), King considered that financial statements which reported one set of figures accompanied by qualifying or explanatory footnotes were potentially misleading. After the SEC had been operating for more than a decade, King could appeal to the authority of recent practice, and argue that 'any major changes in basic principles or in the form and content of the income statement or the balance sheet should be made only after the entire accounting profession has given serious consideration thereto and is willing to endorse them without reservation or exception' (King, 1948, p. 354). However, King's review of a sample of 100 deficiency letters issued by the Commission made no reference to upward asset revaluations (King, 1947). This is consistent with the previously noted interpretation that, by the end of the 1940s, the practice of asset write-ups by SEC registrants was virtually extinct.

However, the practice appears to have survived elsewhere, and to have found new supporters in a time of postwar inflation: a revision of ARB 5 (included as Chapter 9 section B of ARB 43, 1953) acknowledged that fixed assets 'have occasionally been written up to appraised values because of rapid rises in price levels, to adjust costs in the case of bargain purchases, etc.'.

Andrew Barr (who had been originally recruited by Blough in 1938) became Chief Accountant in November 1956 and 'accepted the responsibility for continuation of the policies that had been established by his predecessors' (Previts, 1978, p. 88). Barr held the post until January 1972. Thus SEC accounting policies continued to be strongly influenced by staff who had joined the Commission in the 1930s — a time when the reporting of data based on 'appraisals' had been regularly discouraged.

Conversely, the accounting literature continued to reflect the view that asset write-ups were a legitimate means of representing the circumstances of firms in the face of changing prices. There was little support for the use of 'appraisals' based on the present value of expected future services (though of course that concept of asset valuation was to re-emerge in the academic literature in the 1960s). Rather, contributors to the literature frequently referred to the misleading nature of cost-based valuations of properties (such as land and buildings). Accounting writers regularly expressed support for the writing-up of those assets — or the footnote disclosure of current market values (see, e.g., Hatfield, Sanders and Burton, 1940, p. 339; Weston, 1953, pp. 489–90; Hills, 1957, p. 87; Paton and Dixon, 1958, p. 457). Texts on security analysis occasionally alluded to the absence of this type of information as a major limitation of accounting practice (see, e.g., Graham and Dodd, 1951, p. 180). Montgomery's *Auditing* continued to refer to write-ups or footnote disclosures of appraisal values as though these practices were both commonplace and legitimate (Montgomery, 1940, pp. 238–41).

Despite the weight of academic opinion, during either King's or Barr's term of office the administrative processes of vetting documents filed for registration in terms of the Securities Acts were finally extended to eliminate footnote or textual references to estimates of market values.

Some evidence of SEC attitudes towards supplemental disclosures during Barr's term of office as Chief Accountant is obtainable from reference to documents filed in the case of Gerstle *et al.* *v.* Gample–Skogmo Inc. (1968). The plaintiffs complained that proxy materials concerning a proposed merger had omitted information about a company's appraisals of the sale value of 'branch' assets (real estate and advertising hoardings). Further, the plaintiff complained that the company had not disclosed its intention to sell those assets or that third parties had made offers substantially above book value (see Manne, 1969). It emerged that during a conference with SEC staff the company had been told that the inclusion of appraisal data in proxy statements was against SEC policy. Somewhat inconsistently, an SEC Memorandum submitted to the court in this case argued that, *when liquidation of assets was* *intended,* information about liquidating values should be disclosed in order that a proxy statement was 'not misleading'.

Yet for routine financial reporting, the Memorandum stated that 'fixed assets should be carried at historical cost (less any depreciation) in the absence of any statute, rule or specific Commission authorisation to the contrary' (SEC, 1968, p. 9). The Memorandum acknowledged that in some early stop-order proceedings the SEC had rejected write-ups because the valuations had been haphazardly prepared — and 'by negative implication' suggested that carefully and expertly prepared appraisals might have been acceptable. But the Memorandum continued: 'in all formal Commission decisions of which we are aware, not involving a situation specifically covered by statute or rule, the Commission has required that the write-up of fixed assets based on appraisals be deleted from filed financial statements' (1968, p. 12). This misrepresented the early decisions of the SEC (though in many ways the interpretation that the SEC had unequivocally 'banned' asset write-ups echoed the earlier analysis of Barr and Koch, 1959). As described above, the Commission had in fact permitted a number of firms to revalue assets during Blough's term of office. It seems likely that only the 'worst' cases would have gone to stop-order proceedings, as Commission staff would have been able to persuade most registrants to revise their registration statements; stop-order proceedings may have been reserved for those promoters the SEC considered deserving of special attention. In those terms, it was not surprising that the majority of *formal* SEC decisions involved the elimination of arbitrary appraisals.

However, it is difficult to understand how the authors of the Memorandum in the Gerstle case could have asserted that all of these early cases resulted in the elimination of appraisals. It was well known that in 1936 the Commission had permitted a public utility company to revalue assets (Montana–Dakota Utilities Co. — 1 SEC 299). This case was clearly listed under 'write-ups' in an unpublished index to SEC decisions prepared by the Chief Accountant's office some years earlier, and which remained on file in the SEC's library.

10. SUMMARY

The evidence reviewed here suggests that in its early years the SEC had a profound influence on U.S. accounting practice by preventing SEC registrants from including 'appraisals', or estimates of the 'current value' of fixed assets, in documents filed with the Commission. The SEC did not produce explicit rules dealing with these questions (and abandoned projects intended to produce such rules). Instead, its ban was imposed through administrative procedures which progressively became more stringent.

It is clear that a dominant element in the shaping of these policies was the strong conviction of some SEC staff that 'writing-up' assets was improper. These views became stronger (or, perhaps, 'narrower') over time. In its early years SEC staff were only opposed to the use of capriciously calculated appraisals of the 'value' of corporate assets; indeed, the SEC engaged professional engineers to ensure that these assessments were well-founded. By 1940 the use of appraisals (in the sense of estimates of 'present values') was effectively prohibited. Further, a distinction had implicitly been drawn between 'appraisals' based on expected earnings, on the one hand,and appraisals based on estimates of current market prices. During Blough's term as Chief Accountant several firms were permitted to file financial statements which employed 'write-ups'. But after Blough's departure the distinction between 'expert' and capricious appraisals seems to have been forgotten.

Moreover, SEC staff gradually simplified their descriptions of SEC policies. The early decisions to prevent the use of appraisals of the value of mine reserves, patents or technical processes by corporations seeking the registration of proposed security issues were later cited as authority for opposition to the use of estimates of selling or replacement prices in annual financial statements (whether by formal upward revaluation or by supplemental disclosures). Instances where the SEC had permitted the upward revaluation of fixed assets in registration documents were either forgotten, overlooked or ignored. Indeed, it might be claimed that analyses of formal SEC decisions by SEC staff involved selective citation, since rare decisions to approve write-ups were not mentioned (despite the fact that they had been clearly indexed in the SEC's own files).

One can only speculate about the factors which contributed to the successive hardening and simplification of attitudes towards write-ups and the use of current values. Certainly accountants were not represented on the Commission during the time that these policies were established. Commissioner Healy's experience with the FTC investigation of public utilities had convinced him that write-ups in any form were financial chicanery; his understanding of the underlying accounting issues seems to have been limited. However, the SEC did employ articulate professionals. It may be significant that successive Chief Accountants had worked for long periods within the Commission — and so may well have had a common approach to many accounting issues. It may be that the essentially legalistic activities of the Commission imbued the accounting staff with a strong respect for precedent (and correspondingly, made them reluctant to re-examine issues on their merits). Certainly the appointment of Werntz, an attorney, to the post of Chief Accountant seems to have been followed by a period in which SEC staff tended to oppose write-ups, on the basis of appeals to the authority of past decisions.

Speculation aside, the foregoing review of the history of the SEC's stance against asset revaluations highlights the imprecision of accounts of U.S. experience with asset revaluations in the 1920s and 1930s. According to popular belief, write-ups were commonplace in the 1920s; Fabricant's (1936, 1938) evidence suggests that write-ups of durable assets were relatively infrequent, while May (1943) considered that many 'appraisals' were only reported as notes to balance sheets or in the text of prospectuses. Again, according to popular belief, many firms were forced to write-down the assets they had previously written up; Fabricant's evidence suggests that many of the write-downs involved previously capitalized intangibles. It has been suggested that the FTC's investigation of utilities revealed evidence of flagrant write-ups; while that may have been so for some corporations, it appears that these 'write-ups' were effected through inter-company transactions (i.e., use of cost-based accounting) and that the effect of these transactions could have been negated by the elimination of inter-company profits in the process of preparing consolidated statements. The SEC is widely believed to have banned the use of 'appraisals' in financial statements in its early years; yet the record discloses that the Commission only opposed the use of *poorly prepared* 'appraisals' — and then was primarily concerned with disclosures in registration statements and *prospectuses*, not in annual financial statements.

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SUMMARY OF SEC DECISIONS CONCERNING WRITE-UPS AND APPRAISALS, JULY 1934–MAY 1962

Reference	Decision (date promulgated)	Act	Asset type	Particulars
1 SEC 37	Haddam Distillers Corp. (24 October 1934)	1933	Machinery and equipment	Appraisals false — purported to reflect 'replacement cost new' and 'sound value' (replacement cost new minus depreciation), but the figures assigned to items were in excess of current replacement prices of new equipment
			Water supply	'Valuations considered false'; values assigned to a creek and artesian well on firm's land; values challenged 'both as to result and method'
			Land and buildings	Valuations of these assets not challenged
1 SEC 54	Continental Distillers and Importers Corp. (26 January 1935)	1933	Land	Appraisal unreliable; showed 'disregard of the recent sale of the entire property, land, buildings and water rights'; 'a total disregard of the tax appraisal and of the local real estate market'
			Building, structures and improvements	Appraisal extravagantly high; some buildings had been demolished when registration statement filed; others falsely described as 'remodelled and specially constructed for distilling purposes'
			Machinery and equipment	Appraisal related to disused boilers scrapped shortly afterwards
			Plans and other items of expense in erection and operation of distillery	Appraisal related to structures under demolition
1 SEC 98	Big Wedge Gold Mining Co. (4 April 1935)	1933	Lease of mining claims	Lease valued at an 'arbitrary figure which was simply the exact equivalent of the par value of the stock given for the property'
1 SEC 123	Brandy-Wine Brewing Co. (22 April 1935)	1933	Land, buildings and improvements	Commission overruled trial examiner's determination that assets overvalued (relative to market prices); since assets were represented to be 'at cost' there was no misstatement
			Gravel contract	Registration statement referred to a contract estimated to produce $250,000 over ten years. This contract was 'a sham'

Appendix (contd)

Reference	Decision (date promulgated)	Act	Asset type	Particulars
1 SEC 139	Plymouth Consolidated Gold Mines Ltd (1 June 1935)	1933	Mine properties	Valued at figures representing par value of stock issued to promoters in exchange for properties
			Underground workings	Value valued by company's agent, at figure far in excess of cost
			Ore inventories	Valued at arbitrarily obtained figures
1 SEC 217	La Luz Mining Corp. (4 October 1935)	1933	Mining properties	Estimates of value of gold reserves in 'mining property' prepared from evidence obtained from a 'doodle-bug'
1 SEC 285	Franco Mining Corp. (1 February 1936)	1933	Lease and option	Decision contained no discussion of asset valuation but concerned statements regarding potential of mine
1 SEC 299	Montana–Dakota Utilities Co. (13 March 1936)	1935	Natural gas reserves	$3,420,211 of a balance sheet figure of $3,487,919 represented 'appreciation resulting from revaluation of properties after acquisition thereof' and constituted discovery values assigned to natural gas 'due to the development of markets in which to distribute such gas'. The Commission did not object to this procedure since 'the write-ups are earmarked on the company's balance sheet . . . and should, therefore, not deceive investors or limit action by regulatory Commissioners in fixing or otherwise acting in the interests of investors, insurers, and public'
1 SEC 311	Snow Point Mining Co. (14 March 1936)	1933		Valuations not at issue; representations concerning proposed expenditure on mine equipment and accommodation for mine workers were considered misleading since they suggested a large mining venture
1 SEC 330	Lewis American Airways Inc. (27 March 1936)	1933	Patents, deferred charges, models, development expenses, real estate	Arbitrary values assigned to assets; assets were acquired in exchange for shares issued by registrant; and an unexplained discrepancy between values assigned to shares issued for different items was deemed an omission and misstatement of material facts
1 SEC 621	Great Dike Gold Mines Inc. (3 August 1936)	1933	Lease and option over mine	Valuation arbitrary; performed by an accountant with no knowledge of mining operations

1 SEC 701	American Terminals and Transit Co. (29 September 1936)	1933	Land	Appraised value 'not put in issue'; but real estate only subject to option and 'did not represent fee ownership'
			Terminal plant	'Written-up' through improper cost tracing (debt discount)
			Coal-mining land	Basis of appraisal falsely stated to be 'original cost depreciated'; actually based on market prices of six transfers of nearby coal lands 1920–5. Commission found errors in present value estimates and considered that the recent sale price of the property in question should not have been ignored
			Machinery and equipment	Appraisal values far in excess of market values of second-hand machinery
			Coal cars, rolling stock	Valued at 'replacement cost depreciated' though registrant planned to scrap them. Held they should have been valued at 'salvage or resale value'
1 SEC 752	Gilpin Eureka Consolidated Mines, Inc. (8 October 1936)	1933	Mine workings	Appraisal false — based on 'reproduction cost' of mine shafts; ignored cost of rehabilitating workings which were caved in or under water
1 SEC 786	Mining and Development Corp. (20 October 1935)	1933	Mining property	Balance sheet failed to disclose that one property 'not in fee but on lease-purchase option', and that the lease was in default the day after balance date. Properties valued with regard to prospective ore values; estimate in excess of net present value
2 SEC 141	Livingston Mining Co. (3 April 1937)	1933	Ore reserves	Appraisal in registration statement of tonnages and values 'not prepared by use of orthodox methods'
			Buildings, mine workings and equipment	Appraisal arbitrary — 'has the appearance of an appraisal made for promoters by one who knew what figures the promoters wanted'
2 SEC 209	Emporia Gold Mines (23 April 1937)	1933	Ore reserves	Figures shown at estimates of ore supposedly in mine 'without any reduction for the cost of milling and without any discount of valuation figures to present worth'
			Equipment	Equipment not in existence
2 SEC 226	National Boston Montana Mines Corp. (28 April 1937)	1933	Mines, mining property, equipment and development	Assigned arbitrary figures of more than $9,000,000; properties acquired for issue of 1,700,000 shares of $1 par value (which were being offered to public at 5 cents per share)

APPENDIX (contd)

Reference	Decision (date promulgated)	Act	Asset type	Particulars
2 SEC 316	Consolidated Mines Syndicate (19 May 1937)	1933	Mining properties	Write-up under heading 'unrealized appreciation' based on estimates which the Commission determined were based on 'thoroughly haphazard calculations'
2 SEC 329	Sunset Gold Fields (20 May 1937)	1933	Gold reserves	Estimates unreliable; recoveries could take forty to eighty years with present capacity, but no attempt made to apply present value calculations
2 SEC 486	Bering Straits Tin Mines Inc. (2 July 1937)	1933	Mining claims	Valued at an arbitrary figure; held to be misleading since investors entitled to believe that such a figure in the balance sheet represents cost or 'value' arrived at by an accepted means of valuation
2 SEC 548	Canusa Gold Fields (15 July 1937)	1933	Mining property	Leased property; held to be misleading even though note to balance sheet indicated that property was not held 'in fee' and liabilities included amounts unpaid on lease
			Mining properties, buildings and equipment	Shown at 'cost'; cost calculated by reference to $1 par value of stock issued in exchange for properties when market price of stock 6–30 cents
2 SEC 893	Petersen Engine Co. Inc. (2 December 1937)	1933	Developments of experimental engines	'Capitalization by management' of 'unverified development expenses' of predecessor companies
			Patents, plans and other intangible assets	Misleading since patent applications only 'pending'; value represented 'excess of par value' of stocks issued by registrant over 'cost to predecessor companies' of the net assets acquired at 'organisation of company'. (This difference described by Commission as 'unrealised appreciation')
3 SEC 55	Gold Dust Mining and Milling Co. (12 January 1938)	1933	Ore reserves	Not concerned with accounting issues but with mining engineer's estimates of physical quantities of 'proven' and probable ore (as required Form A-O-1)
3 SEC 233	South Umpqua Mining Co. (7 March 1938)	1933	Ore reserves	Appraisal of value of reserves based on arbitrary estimates; statements of definite ore tonnages misleading; assay values were overstated

3 SEC 608	Unity Gold Corp. (19 July 1938)	1933	Property, plant and equipment (including 'deferred development')	'The deficiency arises from the fact that the figure . . . for deferred development includes a write-up.' Revaluation based on appraisal upon reorganization. Independence of and competence of appraiser not questioned, but revaluation based on reproduction cost new and registrant not a 'going concern'. Commission cited ASR 8
3 SEC 709	Breeze Corporation Inc. (5 August 1938)	1933	Patents, patent applications and trademarks	Items valued at 'appraised value'; the Commission found that the process used to provide these figures 'cannot . . . be designated an appraisal' since it was not based on 'scientific method', and was not supported by past results
3 SEC 872	Platoro Gold Mining Inc. (19 September 1938)	1933	Mining properties	Balance sheet submitted with registration statement (not required by Form A-O-1). Balance sheet misleading and defective (e.g. stock issued for promotional services regarded as part of cost of properties acquired)
4 SEC 347	Monitor Gold Mining Co. (4 January 1939)	1933	Ore reserves	Balance sheet attributed a value to unproven ore reserves; Commission decided that interest rate used in present value calculations was too low in view of the risks involved
6 SEC 597	Consolidated Grain Corp. (9 January 1940)	1933	Plant and equipment	Valuations of company formation were partly replacement prices, partly arbitrary figures — both higher than book values of predecessor companies. Registrant continued to charge depreciation on earlier book values. Commission held that balance sheet should show 'appreciated surplus', and depreciation should be based on written-up values. Portion of revaluation arbitrary and should be eliminated
6 SEC 926	Winnebago Distilling Co. (24 February 1940)	1933	Real estate	Written up from cost to appraised value but without regard to price of recent prior sales of that property, its 'assessed value' or the sales prices of comparable tracts in the vicinity
			Water rights	Rights 'appurtenant to land' valued at four times cost savings if water obtained from town supply. Commission found no justification for this arbitrary calculation and suggested that estimating 'cost savings' inappropriate given other sources of water

Appendix (contd)

Reference	Decision (date promulgated)	Act	Asset type	Particulars
6 SEC 1062	The Republic Co. (13 March 1940)	1933	Notes receivable	Notes represented amounts owing from stock issues; Commission expressed a preference for reporting unpaid subscriptions as a deduction from the capital account. Present treatment deemed misleading since collectability of the notes doubtful
7 SEC 689	Resources Corp. International (10 July 1940)	1933	'Investment in capital stocks of subsidiaries and in timber tracts'	Valuation arbitrary; based on stock issued, to value equivalent to what directors advised had been the 'cost' to a predecessor syndicate. No independent valuation had been undertaken
7 SEC 913	Free Traders Inc.	1933	Shares	Firm proposed to trade in shares and calculated 'profits' with regard to unrealized appreciation. Held to be misleading to use the term 'profit' in this fashion
8 SEC 172	Marquette Mines Inc. (14 November 1940)	1933	Ore reserves	Estimates of worth of ore reserves not supported by available data
			Mining property	Appraisal based on cost of mine shafts to predecessor companies; includes abandoned development work 'of no present value'
			Buildings and equipment	Valued at replacement prices of new structures, and replacement prices of new or second-hand equipment. Figures represented 'write-up of nearly 150%' on book value to predecessor companies. Commission cited ASR 8; stated that registrant not entitled to assign going concern values to its plant and equipment
10 SEC 358	Comstock–Dexter Mines Inc. (22 October 1941)	1933	Ore reserves	Balance sheet showed 'Prospective value of exposed ore body' and 'Prospective (unrealized appreciation of exposed ore body)' as assets. Commission commented that neither item 'represents any properly determined appraisable or realizable value'
15 SEC 20	Colorado Milling and Elevator Co. (18 December 1943)	1933	Grain elevators	Appraisal report included in registration statement (though not required). This appraisal 'failed to meet acceptable standards' (e.g. engineer had not inspected or obtained information about all grain elevators, and had not made a detailed inventory)

27 SEC 151	Thomascolor Inc. (26 November 1947)	1933	Patents and patent applications	Valuation said to represent par value of stock issued to acquire predecessor companies less book value of net assets of those companies. Held to be misleading because figure included par value of stock donated back to registrant and because the transaction included compensation for 'promotion'
37 SEC 699	Coastal Finance Corp. (10 April 1957)	1933	Loans receivable and fixtures	Stated at 'appraisal' value; held to be misleading since no allowance had been made for delinquent accounts
38 SEC 423	The Fall River Power Co. (4 June 1958)	1933	Hydro-electric plant; water rights	Disclosures of cost and appraised replacement value of plant both misleading. Cost figure had been overstated; figures for replacement costs were not market prices. Appraisal value of water rights simply an arbitrarily chosen figure

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Fixed Asset Revaluations and Managerial Incentives

The study attempts to explain why Australian companies revalue their fixed assets, when a revaluation, *by itself*, has no discernible direct effect on cash flows and is costly to carry out. A revaluation is hypothesised to affect contracting and political costs. It may also help resolve problems associated with information asymmetries, or be used to signal information to investors. The results support the proposition that economic forces help explain the decision to revalue assets.

Key words: Fixed assets; Incentives; Management; Revaluation; Valuation.

An asset revaluation refers to the restatement of the asset's book value (carrying amount) to approximate some current value. Revaluation involves an accounting entry which, by itself, has no discernible direct effect on the firm's cash flows, except for the cost of undertaking and recording the revaluation. Why, then, have asset revaluations been commonplace in Australia and, for that matter, elsewhere?

Earlier studies have looked at asset revaluations from an information content perspective.[1] They have attempted to identify abnormal returns on the firms' securities around the time the market became informed that a revaluation had taken place, with mixed results. Brown and Finn (1980) suggested that the question of whether asset revaluations *per se* affect share prices could better be answered if it were understood why revaluations were made. That is, the incentives that motivate managers voluntarily to revalue their firms' assets should be explicated, so that the wealth effects of their decisions can be understood.

We argue that a revaluation affects contracting and political costs. Hence managers are not indifferent to how and when they revalue their firms' assets. We also argue that an asset revaluation may help resolve problems caused by information asymmetries, in that insider-managers can signal important information which they hold, by revaluing the assets they manage.

[1] Sharpe and Walker (1975), Standish and Ung (1982) and Emanuel (1986) studied revaluation announcements by firms in Australia, New Zealand and the United Kingdom respectively.

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BACKGROUND AND HYPOTHESES

The Nature of an Asset Revaluation and its Accounting Effects

The Accounting Standards Review Board, in ASRB 1010,[2] defines a revaluation as establishing a revised carrying amount for a class of non-current assets, other than by way of depreciation. When a revaluation is made, either a revaluation increment or a decrement can occur. This study examines why firms revalue their fixed assets upwards. It does not address the issue of downward revaluations.

Our analysis is confined to fixed asset revaluations because the economic incentives are more clearly specifiable.[3] Focusing on fixed asset revaluations yields a more homogeneous sample and so allows meaningful relationships to be more easily specified and tested.

The costs of a revaluation include: fees charged by the valuer[4]; the opportunity and out-of-pocket costs of the time directors spend in reviewing the figures to be reported and discussing them with the auditors; record-keeping costs; and the costs charged by the auditors for the additional review. These costs are presumed to be sufficiently large to influence management's revaluation decision. A similar position was taken by Watts (1977, p. 67): 'Market values of assets for use in monitoring covenants are costly to obtain... Revaluations would occur when the effect on agency costs of the disparity between market and book value exceeded the cost of revaluation' (p. 67).

A revaluation of fixed assets increases the book value of total tangible assets and, therefore, of total assets. Shareholders' equity increases by the same amount, because the bookkeeping 'credit' is made to asset revaluation reserve. Before July 1987, the balance in the asset revaluation reserve could be used to capitalize an issue of tax-free bonus shares.

As depreciation reflects the most recent carrying amount, a revaluation of depreciable assets affects future profit calculations. Net profit can again be affected when the depreciable asset is sold. Accounting standards require: (a) that a gain or loss on the sale of a previously revalued asset be determined as the difference between the sale proceeds and the carrying amount of the asset at the time of sale; and (b) that the gain or loss be brought to account in determining the profit or loss for the financial period in which the disposal occurs. Revaluation of a non-depreciable asset can, similarly, affect the net profit when the asset is sold.

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[2] ASRB 1010, *Accounting for the Revaluation of Non-Current Assets*, which supersedes the Statement of Accounting Standards, AAS 10, of the same title, applies to the financial years of a company that ends on or after 30 September 1987. Before this date but after 1 July 1981, AAS 10 was operative. Prior to AAS 10, the relevant standard was AAS 1, *Profit and Loss Statements*. The basic reporting requirements for upward asset revaluations, the focus of this paper, remained the same over the period we studied (1974–86).

[3] The economic incentives for revaluation of other assets are less clear. For example, debt covenants and industry norms exclude intangible assets in determining the borrowing power of a firm; and investments are said to be less capable of supporting debt as they are easily converted from 'in-place' to 'out-of-place' assets.

[4] The fee recommended by the Australian Institute of Valuers for a property with an appraised value of $30,000 was about 0.5 per cent of the appraised value, and for a property with an appraised value of $2 million, about 0.2 per cent.

In the short run, and except for the revaluation costs, if firms revalue their non-depreciable assets there need only be a 'mainly balance sheet effect'; that is, an increase in the book value of tangible assets with net profit unaffected. If firms revalue depreciable assets, there is a net increase in tangible assets, which is accompanied by lower periodic profit figures.

Asset Revaluation in the Contracting and Political Process

Contracting Costs. Since the revaluation of an asset affects accounting numbers, the decision by management to revalue assets changes the firm's financial profile. In particular, it changes the debt to total tangible assets ratio, commonly used in debt contractual arrangements.

Australian debt covenants typically limit total liabilities and secured liabilities to fractions (depending on the type of debt issued) of total tangible assets. Violation of a limit imposes costs on the firm, because its investment and financing choices become sub-optimally constrained.[5] Furthermore, a technical default can trigger costly debt repayment or renegotiation costs.[6] Since a revaluation increases the book value of total tangible assets, it loosens debt covenant restrictions; a formal limit on leverage will therefore increase the probability of a revaluation, to avoid these costs. This reasoning leads to the following hypotheses:

H1: The higher the ratio of debt to total tangible assets, the more likely a firm will revalue its assets.

H2a: A firm with a debt covenant in place is more likely to revalue than a firm without a debt covenant.

Most previous studies of accounting choice have not determined the financial constraints of each covenant. Rather, the debt/equity ratio was assumed to be an adequate proxy for them all. Ball (1985) claimed that the use of actual leverage to proxy for closeness to debt covenant constraints has led to a bias towards finding significant results. For this reason, we test directly the significance of the firm's proximity to violating its specific constraint.[7] The closer the firm is to a violation, the higher the 'debt–proximity ratio' (defined as the ratio of debt to total tangible assets, divided by the debt constraint of the type of debt in place) and the greater the probability that the firm will revalue.[8]

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[5] Whittred and Chan (1987) found that potential violation is more likely to be associated with the total liabilities constraint than with secured liabilities. The potential violation of the latter constraint is not examined in this study.

[6] It has been argued that the higher renegotiation costs of public debt might provide an incentive for the firm to revalue rather than renegotiate. However, the question of public versus private debt is not examined further as there are major difficulties in delineating public and private debt (see Kelly, 1983).

[7] See Table 1. We assume the constraint to be whichever is the most binding: 60, 75 or 80 per cent of the total tangible assets for debentures, convertible notes and unsecured notes respectively (refer Whittred and Zimmer, 1986).

H2b: The higher the debt–proximity ratio, the greater the probability a firm will revalue.

Political Costs. Accounting numbers may be used to justify corporate actions in a politically regulated environment. The Prices Justification Tribunal was established in 1973 to force firms, especially large ones, to pay closer attention to pricing policies, and to promote awareness of public responsibilities. Nieuwenhuysen and Daly (1977, p. 32) documented that the Tribunal evaluated applications to increase prices by making 'a comparison of a company's *profitability* with the average for the industry... Companies considered to be highly profitable were required to absorb a larger proportion of cost increases'. Underlying the political process theory is the crucial assumption that regulators and other interested parties do not incorporate into their decisions the substantive effect of an accounting change. In relation to the Prices Justification Tribunal, Leech (1975, p. 157) suggested that, despite the different ways in which profitability ratios were calculated, 'the Tribunal either considers the difference unimportant, that there is no theoretical justification for preferring one to the other, or that, in the name of expediency, it is best to accept whatever figures the company can supply!'

When larger firms report 'high' profits, their profit reports are more likely to be noticed by regulators and others who may have incentives and the capacity to reallocate resources away from them. Under such circumstances, larger firms have greater incentives to adopt income-reducing procedures and to cut the expected loss from regulation.

If it is assumed that managers' incentives are aligned more closely with the interests of shareholders,[9] a manager might undertake a revaluation to lower the firm's return on equity because, other things being equal, a lower return can reduce political costs and increase the value of the firm. For instance, Watts (1977, p. 69) suggested that the adoption of replacement cost depreciation by BHP in the 1970s was 'most likely due to that corporation's size and sensitivity to the political process'. In BHP's case, the change to replacement cost depreciation resulted in lower profit figures

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[8] Since revaluation of a depreciable asset lowers reported profits, it might be argued that management could be concerned with how profit reductions would affect debt contracts. However, few Australian debt contracts contain an interest coverage (see Whittred and Zimmer, 1986) and when they do, continuing compliance is not usually required. Further, some trust deeds permit the writing back to profit of depreciation charged in excess of the amount allowed for tax purposes, as long as the write-back represents an increase in the net book value of tangible assets (see Whittred and Zimmer, 1986). This adjustment effectively negates the profit effect of increased depreciation, for debt contracting purposes.

[9] It is plausible that management might be discouraged from undertaking a revaluation because it would result in a lower accounting rate of return and thereby adversely affect management compensation. Because it is difficult to observe the nature of management compensation plans in Australia and, in particular, how an adjustment for a revaluation is incorporated into the plans, we are unable to analyse their effects.

(due to higher depreciation charges) and lower rates of return (through lower profits and a higher asset base).[10]

It is possible that a revaluation would so increase the size of the asset base that it would draw political attention to the firm. Such an effect would mitigate the benefits from a reduced accounting rate of return.

Over time, a firm's accounting return on equity (ROE) will increase due to inflation, other things being equal. This increase in ROE may result, for example, from the realization of inventory holding gains or from the asset base being recorded at historical cost. Larger firms, being more under public scrutiny, will be more likely to revalue their assets in order to report lower rates of return.

H3: Larger firms are more likely to revalue than smaller firms.

Size, however, is a noisy proxy for political cost (Ball and Foster, 1982). As it can proxy for other effects (such as industry membership and leverage), the results for this variable must be interpreted with care.

Another proxy for political costs is the strike-proneness of the industry in which the firm operates. The high incidence of strikes, particularly in the 1970s (a sub-period covered by this study), was partly due to pressure being applied by unions in the belief that employers were unduly reluctant to accede to wage increases, despite the historically higher accounting returns on equity. Chambers (1973) suggested that a revaluation may relieve companies of misinformed pressure for higher wages.[11] Management would find it easier to explain and justify the firm's financial position, even if the union could figure the effect of the revaluation.

H4: Firms operating in strike-prone industries are more likely to revalue than firms operating in other industries.

Perry (1979) identified certain industries which have been prone to strikes: coal mining, waterfront, metal trades and building and construction. Firms in these industries may be more strongly motivated to revalue their assets, to avoid 'excessive' wage demands.

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[10] An interesting question that arises is why many firms have not provided for depreciation on buildings as required by accounting standards (see Craswell, 1986). Some large firms possibly choose not to depreciate buildings (although depreciation lowers accounting rate of return and might affect political costs) for contracting reasons, especially if the firms are highly geared. That is, unless their trust deeds permit the write-back of the 'excess' depreciation, firms might be unwilling to provide for depreciation on buildings, and prefer to settle for a qualified audit report.

By extending Watts' argument one could predict that larger firms are more likely to revalue depreciable assets (in particular, plant and equipment) than smaller firms, because of the more pronounced (negative) effect on return. As only a small proportion of fixed asset revaluations were of plant and equipment, the prediction was not tested.

[11] Ford and Hearn (1980) alleged that the Australia-wide strike against General-Motors Holden in 1964 resulted from the inadequate understanding by the union of the firm's financial position, in particular of its profit levels.

Asset Revaluation and Information Asymmetry

Information asymmetry arises when one party to a potential transaction has information not held by another. Myers and Majluf (1984) argued that, in the presence of information asymmetry, a firm with sufficient 'financial slack' can avoid higher external financing costs and can take on profitable new projects which otherwise might be passed over. Financial slack can take the form of liquid assets such as cash and marketable securities, and reserve borrowing capacity.[12]

Reserve borrowing capacity is enhanced by increasing the book value of total tangible assets. The increase can result from retained profits (net assets added as a result of the firm's income-producing activities and dividend policy), or from increases in specific asset prices. The latter source of reserve borrowing capacity can be accessed, at a cost, through an asset revaluation.

With information asymmetry, it is generally assumed that outsiders cannot observe corporate characteristics in sufficient detail to calculate the values of the securities (e.g., Ross 1977). Managers of firms with undervalued shares have an incentive to expend additional resources, such as by the payment of a higher dividend or meeting the costs of a revaluation (as suggested, e.g., by Standish and Ung, 1982), to signal the undervaluation.

Financial Slack. As we discussed above, reserve borrowing capacity can be accessed by a revaluation of assets. The 'worth' of such a revaluation is related to the size of the slack created, the size and composition of existing slack, the opportunity cost of maintaining slack in the form of liquid assets such as cash and marketable securities, the growth opportunities of the firm and the method by which the revaluation is done.

The size of the slack that can be created depends on the disparity between the book and market values of the assets. The greater this disparity, the greater the probability of a revaluation. In the case of property, for example, this disparity depends on the firm's current investment in property, the length of time since the property was last revalued, the overall inflation rate since the last revaluation, the specific price increases for property relative to inflation generally, and the location and nature of the property (which determine specific property values).

The disparity between book and market values increases with the length of time and the annual increase in specific prices since the last revaluation. Because it is difficult to construct a price index that appropriately captures increases in property values, we do not introduce the inflation rate directly into our model. But, other things being equal, we expect a greater frequency of revaluations during a higher inflationary period than at other times (as stated in H10 below).

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[12] Based on 132 responses to a mail questionnaire conducted towards the end of 1989, Allen (1990) found that the average short-term debt capacity, in the form of lines of credit and bill facilities, is 24 per cent of total debt levels. Anecdotal evidence that reserve borrowing capacity is useful is also found in Sabco's 1988 Annual Report. The management (having carried out a major revaluation) reported that 'gearing has been reduced from 47% to 39%. This has enhanced the ability of the Company to take advantage of future expansion opportunities as they arise.'

H5: The longer the time since the last asset revaluation, the greater the probability that the firm will revalue this year.

We conjecture that property values, relative to other fixed assets in place, are likely to be more strongly correlated with inflationary change. If our conjecture is correct, a significant disparity between balance sheet and current values is more likely for property than for other fixed assets. In addition, since the land component of property is non-depreciable and the depreciation rate for buildings is lower than, say, for plant and equipment, the disparity between the book and market values of property is likely to become relatively larger. Hence, a higher property investment implies more opportunity for revaluation. A corollary is that a revaluation is more likely to be of property than of plant and equipment.

H6: Firms are more likely to revalue property than plant and equipment.

Revaluations can be carried out with economies of scale. For instance, the rate recommended by the Australian Institute of Valuers for 'bulk' valuations is lower than that for a single valuation. Other things being equal, the higher the property investment, the greater the revaluation frequency (i.e., the number of times a firm revalues within a given time frame).

H7: The higher a firm's relative dollar investment in property, the greater the probability the firm revalues this year.

The location and nature of the firm's property should provide a more accurate determination of the value of the particular property and hence the size of the slack. Unfortunately, the requisite information is not published and the issue is not considered further.

It can be expected that larger firms have a greater ability to revalue. They have larger pools of assets with greater dollar values, as in the case of a firm with a relatively large investment in property. This means that larger firms can more frequently access slack sufficient to offset revaluation costs. Firm size thus jointly proxies for (a) potential political costs, and (b) the availability of slack that can be accessed.

To have more 'value' for restoring debt capacity, the revaluation should be done by an independent valuer rather than the directors, for the same reason as that suggested by Healy and Lys (1986) regarding choice of auditor. They argued that Big Eight auditors are likely to be particularly valuable to clients who anticipate raising capital in national or international financial markets, since their reputations lower the information costs of investors. Except for companies with debt covenants, where the valuations in most cases must be carried out by an independent valuer approved by the trustee for the debtholders, management can decide between having a directors' or an independent valuation, in which event the incremental benefits and costs of an independent valuation over a directors' valuation would be important considerations.

The acceptancce of a directors' valuation would likely depend on, among other factors, the credibility of management. Because it is difficult to observe the circumstances in which a directors' valuation is optimal for the intended purpose, we have no hypothesis on the method by which a revaluation is carried out. We do attempt to gain some insight into whether the method of revaluation is relevant to the revaluation decision, by re-estimating the model with the revaluation method taken into account.

Financial slack, as mentioned before, consists of liquid assets and reserve borrowing capacity. Other things being equal, the smaller the existing financial slack, the greater the potential gain to the firm from revaluing its assets to restore borrowing capacity. However, in times of higher inflation, if the slack consists largely of cash and marketable securities, the firm could have an incentive to revalue in order to hold slack in the form of reserve borrowing capacity, because the opportunity cost of holding slack in the form of cash and marketable securities increases with inflation.

H8: Firms are more likely to revalue when they have lower holdings of cash and marketable securities relative to total tangible assets, than when they have higher holdings relative to total tangible assets.

H9: Given high inflation, a firm with higher holdings of cash and marketable securities relative to total tangible assets is more likely to revalue than a firm with lower holdings relative to total tangible assets.

This cost effect is examined by choosing two periods, one (1974–7) of relatively high and the other (1984–6) of relatively low inflation. The annual inflation rate (measured by changes in the Consumer Price Index) was about 14 per cent in the 1974–7 period, and 6.6 per cent in the 1984–6 period. Controlling for inflation by having two shorter sub-periods also helps to control for inter-temporal instability of financial statement numbers over time.

H10: Due to the effect of inflation on the movement of property values (and hence the amount of slack that could be created), firms revalue more frequently during periods of higher inflation.

The size of existing slack varies inversely with the ratio of total debt to total tangible assets. The higher the ratio, the greater the probability that the firm will revalue assets to restore borrowing capacity. However, different firms may have different 'desired' levels of slack, even if they have the same ratios. That is, the debt/total tangible assets ratio could be an inadequate proxy. But, since we do not know each firm's desired level of slack, no adjustment can be made. The failure to make an adjustment will reduce the explanatory power of the model.

To discriminate between 'financial slack' and 'default avoidance' explanations of an asset revaluation (because a revaluation to avoid or minimize the probability of default must increase borrowing capacity), we adopt the following procedure: (a) we examine how revaluers with debt covenants differ from those without covenants, and (b) we test whether revaluations are related to changes in debt subsequent to the revaluation. Revaluers with no debt covenants might have revalued to increase borrowing capacity rather than to lower the probability of default. Further, if default avoidance was the dominant reason for the revaluation, debt would not be expected to increase significantly after a revaluation.

Firms with more growth options will value financial slack more highly because of the greater probability of viable projects being passed up, due to higher external financing costs. Consequently, they would be more likely to revalue in order to have sufficient slack, to avoid potential underinvestment.

H11: Firms with more growth options are more likely to revalue than firms with fewer growth options.

Creating Tax-Free Reserves for a Bonus Issue. Standish and Ung (1982) suggested a revaluation might signal an increase in management's forecast of future profits, which would make increased dividends possible. It might also signal that the firm has the potential for raising further debt. They proposed that a revaluation plus a bonus issue enabled a company to increase its dividend payout without necessarily increasing the dividend rate, thereby avoiding adverse political criticism for reporting what may be taken as an excessively high rate of return on assets. Whatever the reason for a bonus issue, Ball, Brown and Finn (1977) showed that bonus issue announcements convey 'good' news to the share market, probably via their connection with the information content of subsequent dividend changes. Based on the preceding observation, it is predicted that, before July 1987, firms with low tax-free reserves are more likely to have revalued their assets in order to create sufficient tax-free reserves, thus giving them the flexibility to declare future bonus issues if and when they were desired for signalling purposes.

H12: Firms are more likely to have revalued when they had lower tax-free reserves than when they had higher tax-free reserves.

A related view can be taken, *ex post*. When a firm declares a bonus issue, one can argue *ex post* that the firm would have created, earlier, a sufficient level of tax-free reserves.

H13: Firms that declare bonus issues are more likely to have revalued, to create sufficient tax-free reserves.

While each revaluation would have increased the level of tax-free reserves, the firm's desired level cannot be specified because we lack a theory which explains each firm's policy on bonus issues. Thus the relationship between the revaluation decision and whether a firm made a bonus issue (H13) is likely to be stronger than that between revaluations and the level of reserves (H12).

Defending Against a Takeover Bid. When a firm receives a takeover bid, its management might face a wealth loss because of the threat to job tenure if the takeover is successful. Management of the target firm might have incentives to fend off the bid. A common defence (Casey and Eddey, 1986) is to signal the informed value of the firm's assets to its shareholders, through an asset revaluation.

Firms which had received takeover bids during the review year are, therefore, more likely than other firms to have undertaken a revaluation (to fend off the threat). Firms which had successfully defended themselves against a takeover in the previous year are also more likely to revalue their assets because, as documented in Walter (1984), a further bid is now more likely.

H14: Firms under threat of a takeover are more likely to revalue than firms not under threat.

SAMPLE PROPERTIES

Our sample is confined to firms listed on the Industrial Board of the Australian Associated Stock Exchanges (but excluding utilities, banks, finance and investment companies), and for which annual reports are available in the Australian Graduate School of Management *Annual Report File.* Two random samples, of 204 and 206 firms, were selected for the 1974–7 (higher inflation) and 1984–6 (lower inflation) periods respectively. The firms selected in the second period are independent of those in the first, to avoid a survival bias. The firms were then placed into the revaluer/non-revaluer categories depending on whether a revaluation took place in each review year. Random sampling, which avoids the estimation problems associated with choice-based sampling typical of many studies on accounting policy choice,[13] is possible here because there is a 'reasonable' representation for the two groups, revaluer and non-revaluer.

The definitions of the explanatory variables and their predicted relationships with the revaluation decision are given in Table 1. Except for the level of tax-free reserves (we have two variables RES/CAP1 and RES/CAP2) and the level of cash and marketable securities to total tangible assets (CMS/TTA, our proxy for liquid assets), the relationship is predicted to be positive.

Table 2 shows the frequency of revaluations, the size of the revaluation increments relative to total tangible assets, the types of assets revalued and the methods by which they were revalued. In sum, in the first period there were 816 cases spread over the four years. In the second period, due to the non-availability of 1986 annual reports for 11 firms (most were taken over), there were 607 cases spread over the three years. In the shorter 1984–6 period, about two-thirds of the firms in the sample revalued at least once; and in the longer 1974–7 period, it was about two-thirds again. About 83 per cent of revaluations in 1974–7, and 90 per cent in 1984–6,

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[13] In the absence of appropriate modification to the estimation procedure, Palepu (1986) showed that choice-based sampling yields biased coefficient estimates, overstates the model's predictive ability and impairs the validity of hypothesis tests.

TABLE 1

VARIABLE DEFINITIONS

Variable	Measured as	Represented by	Expected sign of relationship
Contracting reasons			
Debt to tangible assets	$\frac{\text{Current and long-term debt}}{\text{Current and non-current assets (before the revaluation increment)}}$	DEBT/TTA	+
Existence of debt covenant	1, if have covenant in place 0, otherwise	COVENANT	+
Debt proximity ratio	$\frac{\text{Debt/TTA}}{\text{Debt constraint}}$	DEBT/COV	+
Political reasons			
Size	Natural log of total assets before the revaluation increment	SIZE	+
Strike proneness of industry:			
(i) Frequency of strikes	Number of strikes as a proportion of number of employed persons per year	FREQUENCY	+
(ii) Time lost through strikes	Working days lost per employed person	TIME LOST	+
Informational asymmetry reasons			
Relative investment in property	$\frac{\text{Book value of land and buildings}}{\text{Total fixed assets}}$	PPTY	+
Number of years since revaluation	Elapsed time between a revaluation (if any) in the review year and when a revaluation was last carried out	NYEARS	+
Relative proportion of liquid assets	$\frac{\text{Cash and marketable securities}}{\text{TTA before revaluation increment}}$	CMS/TTA	±
Growth:			
(i) P/E ratio	Last traded price at end of fiscal year to earnings per share in review year	P/E	+
(ii) Rate of growth of assets	Percentage increase in total assets following the review year adjusted for the revaluation increment. This is truncated at 0	ASSETS	+
Tax-free reserves to ordinary capital	$\frac{\text{Capital reserves} - \text{RI} + \text{BN1}}{\text{Ordinary share capital} - \text{BN1}}$ where RI is the revaluation increment, and BN1 is the value of reserves capitalized via a bonus issue that year	RES/CAP1	–
	$\frac{\text{Capital reserves} - \text{RI} + \text{BN1}}{\text{Ordinary share capital} + \text{BN2}}$ where BN2 is the value of reserves capitalized via a bonus issue in the following year	RES/CAP2	–

TABLE 1 (contd)

Variable	Measured as	Represented by	Expected sign of relationship
Bonus issue	1, if a bonus issue was declared in the review year 0, if otherwise	BONUS1	+
	1, if a bonus issue was declared in the review or following year 0, if otherwise	BONUS2	+
Takeover defence	1, if the firm received takeover bid in the review year 0, otherwise	TAKEOVER	+

TABLE 2

FREQUENCY, METHOD AND SIZE OF REVALUATION

	1974–7	1984–6
Frequency of revaluation	No. of firms[a]	No. of firms[a]
One	96	90
Two	22	32
Three	15	12
Four	6	—
Total	139	134

	Type of asset[b]		Type of asset[b]	
Method of revaluation	Real property	Plant and equipment	Real property	Plant and Equipment
Independent valuation	146	5	133	10
Directors' valuation	46	19	39	9
Mixed	7	1	16	—
Total	199	25	188	19

Revaluation as a percentage of total tangible assets	No. of revaluations	No. of revaluations
less than 5%	108	131
5% and less than 10%	64	39
10% and less than 15%	22	6
15% and less than 25%	9	6
25% and more	6	8
Total	209	190

[a] Out of 204 firms in 1974–7 and 206 firms in 1984–6.

[b] As some firms revalued both types of assets simultaneously, the total number will not equal the number of revaluers (209 in 1974–7 and 190 in 1984–6).

had a less than 10 per cent effect on total tangible assets. In both periods, about 90 per cent of revaluations were of real property. About 70 per cent of the property revaluations were carried out by independent valuers, compared with 20 and 53 per cent for plant and equipment in 1974–7 and 1984–6 respectively.

RESULTS

Univariate Results

Within each sub-period, statistical analysis was performed on both the individual year and the pooled sample of all years. Estimation precision is enhanced by the increase in the pooled sample size.[14] For brevity, only pooled results are discussed here. As the distributions of some variables are markedly non-Normal, the Mann–Whitney *U*-test was chosen to test for differences in the continuous explanatory variables.

Revaluers were more levered than non-revaluers in both periods, and were significantly closer to violating their debt constraints (see Table 3). Table 4 shows that, in both periods, higher proportions of revaluers had debt covenants, compared with non-revaluers. Revaluers were significantly larger in size, as expected. The results for labour-related political pressures are mixed. In 1974–7 revaluers had a relatively higher frequency of strikes, but in the 1984–6 period the difference was reversed in sign (though it was not significant). In both periods revaluers had lower time lost due to strikes, but the difference was not significant. Revaluers had higher investments in property; and they revalued more frequently, though again the difference was not significant. They also had lower (albeit statistically insignificant) levels of cash and marketable securities, relative to total tangible assets. In 1974–7 both groups had approximately the same rates of asset growth, while in 1984–6 revaluers had higher growth, whether measured by ASSETS or by P/E multiple. In 1974–7 revaluers had (insignificantly) lower levels of tax-free reserves available and in 1984–6 the means were approximately the same. About 31 per cent in 1974–7 and 28 per cent in 1984–6 of revaluers declared a bonus issue in the revaluation year (BONUS1), compared with 12 per cent in 1974–7 and 19 per cent in 1984–6 of non-revaluers.[15] Revaluers received takeover bids twice as frequently, in both periods. Thus all statistically significant differences in the means of the variables are in the hypothesized directions.

On the whole, the univariate results generally support our arguments that firms revalue to increase financial slack (or to avoid violating a debt covenant), for signalling purposes and to avoid political costs.

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[14] There are gains from pooling the observations into one sample for estimation only if the relationship among the variables is stationary within that period. As observations are pooled across a relatively short period, the non-stationarity problem (other than perhaps for the CMS/TTA variable in the 1974–7 period) should not be serious.

[15] The second variable to denote a bonus issue, BONUS2, differs from BONUS1 in that a second fiscal year is scanned to determine if, *ex post*, a bonus issue was made. The results for BONUS2 are likewise significant at $< .01$.

TABLE 3

UNIVARIATE TEST OF THE RELATIONSHIP BETWEEN VARIABLES FOR REVALUER AND NON-REVALUER

		1974–7			1984–6		
		1 Revaluer	2 Non-revaluer		1 Revaluer	2 Non-revaluer	
Variable	Hypothesis	mean SD $N = 209$	mean SD $N = 607$	z-score[a]	mean SD $N = 190$	mean SD $N = 417$	z-score[a]
DEBT/TTA	$1 > 2$	0.490	0.435	5.57	0.517	0.489	2.34
		0.111	0.128	(< 0.001)	0.148	0.159	(0.01)
DEBT/COV [b]	$1 > 2$	0.832	0.787	2.68	0.875	0.803	3.01
		0.153	0.161	(0.003)	0.165	0.213	(0.001)
SIZE	$1 > 2$	17.26	16.75	4.58	18.44	17.88	3.78
		1.253	1.280	(< 0.001)	1.522	1.623	(< 0.001)
FREQUENCY	$1 > 2$	1.247	1.123	2.40	1.185	1.357	-1.35
		0.847	0.791	(0.008)	1.095	1.210	(ns)
TIME LOST	$1 > 2$	0.813	0.829	0.77	1.298	1.365	-0.88
		0.576	0.665	(ns)	1.311	1.307	(ns)
PPTY	$1 > 2$	0.613	0.579	1.94	0.575	0.501	3.80
		0.172	0.199	(0.026)	0.189	0.213	(< 0.001)
NYEARS	$1 > 2$	4.964	5.590	-1.82	3.371	4.195	-1.63
		5.623	5.931	(ns)	3.876	5.208	(ns)
CMS/TTA	?[c]	0.051	0.065	-1.01	0.075	0.082	-0.09
		0.091	0.102	(ns)	0.101	0.112	(ns)
P/E	$1 > 2$	6.862	7.310	-1.46	13.88	12.99	2.12
		4.684	4.826	(ns)	8.854	9.420	(0.016)
ASSETS	$1 > 2$	0.119	0.118	-0.19	0.240	0.187	3.41
		0.136	0.136	(ns)	0.245	0.240	(< 0.001)
RES/CAP1	$1 < 2$	0.570	0.601	-0.87	1.291	1.300	2.36
		0.646	0.616	(ns)	1.225	2.097	(ns)
RES/CAP2	$1 < 2$	0.534	0.579	-1.04	1.136	1.171	2.24
		0.588	0.600	(0.15)	1.053	1.983	(ns)

[a] Based on Mann–Whitney U-test.

[b] Only firms with debt covenants are included in the tests.

[c] Negative relation in 1984–6; but can be positive or negative in 1974–7.

TABLE 4

UNIVARIATE TEST OF THE RELATIONSHIP BETWEEN THE BINARY EXPLANATORY VARIABLE FOR REVALUER AND NON-REVALUER

Variable	Revaluer	Non-revaluer	Total	χ^{2a}
Panel A: 1974–7	*N* = 209	*N* = 607	*N* = 816	
COVENANT				
Yes	115	204	319	29.05
No	94	403	497	< 0.001
BONUS1				
Yes	64	75	139	35.42
No	145	532	677	< 0.001
BONUS2				
Yes	88	151	239	21.46
No	121	456	577	< 0.001
TAKEOVER				
Yes	11	15	26	3.08
No	198	592	790	0.040
Panel B: 1984–6	*N* = 190	*N* = 417	*N* = 607	
COVENANT				
Yes	86	117	203	16.60
No	104	300	404	< 0.001
BONUS1				
Yes	53	80	133	5.29
No	137	337	474	0.010
BONUS2				
Yes	93	155	248	7.01
No	97	262	359	0.004
TAKEOVER				
Yes	30	35	65	6.71
No	160	382	542	0.005

[a] One degree of freedom.

Multivariate Probit Results

Estimates of the coefficients of a multivariate Probit model are reported in Table 5.[16] Except for the ratio of cash and marketable securities to total assets (CMS/TTA), and the time between successive revaluations (NYEARS) in 1984–6, all coefficients have their expected signs.

Significant coefficients were obtained for the leverage variable (DEBT/TTA), debt-proximity ratio (DEBT/COV), size, relative investment in property (PPTY), ratio of reserves to paid-up capital (RES/CAP1), the payment of a bonus issue (BONUS1), and the receipt of a takeover bid (TAKEOVER). The growth variable, ASSETS, is significant in the 1984–6 period, while NYEARS is significant in the 1974–7 period. The remaining variables, CMS/TTA and the frequency of strikes (FREQUENCY), are not significant in either period. It is difficult to interpret the results for CMS/TTA for the first period, because we predict a positive or a negative effect could have occurred within that period only.

The multivariate and univariate results are essentially consistent, except for RES/CAP1 and FREQUENCY. In the univariate tests, RES/CAP1 is not significant in either period (but it is significant when other variables are controlled for), and FREQUENCY is significant in the first period.

The Probit model in both periods is significant at less than the 0.001 level. However, its explanatory power is modest, in that the adjusted R-square is about 12 and 10 per cent for 1974–7 and 1984–6 respectively. Classification accuracy, assessed by the Lachenbruch test, was 75 per cent for 1974–7 and 70 per cent for 1984–6, results which are significant at less than the 0.001 level when compared to the chance classification model.[17]

Taken together with the univariate results, it is reasonable to conclude that financial slack, signalling reasons, contracting and political costs are statistically significant explanations for the revaluation decision.[18]

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[16] The estimated coefficients from the Probit model are not estimates of the marginal probabilities that a firm will revalue. To obtain the probability of a revaluation conditional on certain characteristics of the firm, as described by the explanatory variables, we need to compute $P_j = \text{Prob.}\ (I^* \leq X_j'\beta)$, where I^* is a Normal variable, with a mean of 0 and a variance of 1; X_j is the vector of characteristics for firm j; and β is the vector of estimated coefficients. P_j, the probability of a revaluation for firm j, has a monotonic relationship with $X_j'\beta$, such that we can describe the direction of the change in P_j, as each independent variable is varied, by the sign of the variable's coefficient.

In the multivariate model, we have chosen to omit the COVENANT variable; the debt proximity ratio (DEBT/COV) is used instead as it provides us with more information than the dichotomous COVENANT variable.

[17] The expected accuracy rate from the proportional chance model is 61.9 per cent for 1974–7 and 57 per cent in 1984–6. This is calculated as $(n_1/n)^2 + (n_2/n)^2$, where n_1 and n_2 are the numbers of revaluers and non-revaluers respectively and $n = n_1 + n_2$.

[18] Tests on each year of the sub-period samples provided some additional confirmation of these associations. Results are available from the authors.

TABLE 5

PROBIT ANALYSIS

Variable	Expected sign	1974–7		1984–6	
		Coefficient	t-ratio	Coefficient	t-ratio
Constant	?	-5.97	-6.05 < 0.001	-3.97	-4.70 < 0.001
DEBT/TTA	+	2.12	4.20 < 0.001	0.76	1.81 0.035
DEBT/COV	+	0.23	1.48 0.069	0.40	2.64 0.004
SIZE	+	0.19	3.76 < 0.001	0.12	2.80 0.002
FREQUENCY	+	0.07	1.12 0.131	-0.10	-1.93 (ns)
PPTY	+	1.14	3.84 < 0.001	1.40	4.60 < 0.001
NYEARS	+	0.02	1.57 0.058	0.00	0.20 (ns)
CMS/TTA	±	0.17	0.28 (ns)	-0.58	-1.02 0.154
ASSETS	+	0.37	1.07 0.141	0.59	2.53 0.005
RES/CAP1	–	-0.19	-2.08 0.018	-0.05	-1.25 0.105
BONUS1	+	0.83	6.50 < 0.001	0.34	2.52 0.005
TAKEOVER	+	0.47	1.75 0.039	0.48	2.80 0.002
Revaluer N =		209(25.6%)		190(31.3%)	
Non-revaluer N =		607(74.4%)		417(68.7%)	
Total N =		816		607	
Test statistics					
Log-likelihood		-407.19		-338.64	
Chi-square		114.17		77.22	
Significance level		< 0.001		< 0.001	
R-square		13.2%		11.9%	
Adjusted R-square		12.0%		10.2%	
Prediction accuracy rate		76.1%		70.8%	
Chance classification		61.9%		57.0%	

Other Results

Revaluation and Debt Covenants. As argued above, if the reason for a revaluation is opportunism to avoid the potential violation of a debt covenant restriction because of the operating and financial risks of existing investments and debt contracts, it is plausible to expect little increase in debt after a revaluation. Alternatively,

TABLE 6

LEVERAGE AND PERCENTAGE INCREASE IN TOTAL LIABILITIES 1974–7[a]

Variable	Mean SD	Mean SD	Mann–Whitney test
Panel A	Revaluer $N = 209$	Non-revaluer $N = 607$	$N = 816$
Debt/TTA	0.49 0.11	0.44 0.13	5.72 < 0.001
INCR[b]	15.6 21.5	17.1 22.1	1.32 0.092
Panel B	Revaluer debt covenant $N = 115$	Revaluer no debt covenant $N = 94$	$N = 209$
Debt/TTA	0.52 0.10	0.45 0.12	4.21 < 0.001
INCR	12.9 16.4	18.9 26.1	0.76 (ns)
Panel C	Non-revaluer debt covenant $N = 204$	Non-revaluer no debt covenant $N = 403$	$N = 607$
Debt/TTA	0.49 0.10	0.41 0.13	7.77 < 0.001
INCR	13.3 16.9	19.0 24.2	1.63 0.051

[a] The results for 1984–6 are very similar and for brevity are not reported here. They are available from the authors.

[b] Percentage increase in total liabilities.

a revaluation could plausibly be equilibrium restoration of the kind rationally expected by experienced borrowers and lenders. To investigate the issue, the percentage increase in total liabilities (INCR) in the year following the review year was calculated for each observation and the sample was then partitioned into firms with and without debt covenants in place. For firms with a decrease in total liabilities, the variable INCR is truncated at zero.

The results (for 1974–7 only) are reported in Table 6. Panel A shows the means of the DEBT/TTA ratio and of the percentage increase in total liabilities for revaluers and non-revaluers. The mean percentage increase in total liabilities in the year following the review year for non-revaluers is only one per cent higher than for revaluers; the difference is significant at the 0.10 level. Although revaluers were more highly levered than non-revaluers (the average DEBT/TTA for revaluers was 5 per cent higher than for non-revaluers) they could still assume substantial amounts of debt, possibly with the help of the revaluation.

Panel B shows that revaluers with no debt covenants (REVALUER/NO COV) had lower leverage but higher increases in leverage than revaluers with debt covenants (REVALUER/COV). That the REVALUER/COV group had lower INCR could be because of their higher leverage and the presence of formal constraints which may have been more binding than informal ones. However, this conclusion is conjectural in view of the statistically insignificant difference.

Panel C shows non-revaluers by whether or not they had debt covenants. Non-revaluers without a debt covenant (NON-REVALUER/NO COV) had lower leverage, but higher increases in leverage, than non-revaluers with debt covenants (NON-REVALUER/COV). (The difference in the respective rates of increase is not significant in 1984–6.) Again, that firms with covenants had a lower mean percentage increase in liabilities might be attributable to their higher initial leverage and to the more binding nature of their formal borrowing constraints.

The above observations suggest that a firm with a debt covenant typically does not revalue to avoid technical default on past borrowings. Rather, any revaluation is to restore the firm's borrowing capacity so that it can assume additional liabilities in the following year.

Inflation and the Frequency of Revaluation. H10, which predicts that firms revalue more frequently during periods of higher inflation, is not supported. About two-thirds of all firms revalued once in the four years 1974–7 (the higher inflation period) and once in the shorter period 1984–6. Furthermore, the average time elapsed between successive revaluations was 5.4 years in the first period and 3.9 years in the second period, results that again do not support the hypothesis.

With hindsight, it could be argued that since a revaluation exercise is costly, a firm would not revalue (even if it could have a larger revaluation increment) unless it would benefit from doing so; for example, when there is a need for reserve borrowing capacity, or when there is strong economic growth (as in the 1984–6 period).

A possible counter-argument is that the CPI does not adequately capture movements in property values, such that a comparison between these two periods (high and low inflation, based on changes in the CPI) is irrelevant.

Multinomial Logit Results. McMillan (1988) observed that directors' valuations (in contrast to independent valuations) were associated with negative cumulative average sharemarket residuals for the thirteen months preceding and including the announcement month of the revaluation. In view of her findings that directors' and independent valuations might be intrinsically different, we fitted a Multinomial Logit model, which allows the dependent variable to take multiple discrete values, compared to the Probit model's zero–one dichotomy. The dependent variable was assigned a value of unity if the revaluation was carried out by an independent valuer (N = 146 in 1974–7), a value of two if it was carried out by directors (N = 63), and zero if the firm did not revalue at all (N = 607). The logit model was significant at < 0.001 ($\chi^2 = 160.3$), with a prediction accuracy of 76.1 per cent, compared with 59.1 per cent for the chance model.

Table 7

COEFFICIENTS OF MULTINOMIAL LOGIT MODELS: 1974–7[a]

		Independent valuation		Directors' valuation[b]	
Variables	Expected sign	Coefficient	*t*-ratio	Coefficient	*t*-ratio
Constant	?	-8.16	-3.96 < 0.001	-16.14	-5.89 < 0.001
DEBT/TTA	+	5.42	5.15 < 0.001	0.50	0.34 (ns)
DEBT/COV	+	0.59	1.98 0.024	0.03	0.07 (ns)
SIZE	+	0.13	1.18 (ns)	0.70	5.16 < 0.001
FREQUENCY	+	0.08	0.65 (ns)	0.26	1.56 0.058
PPTY	+	2.24	3.72 < 0.001	1.50	1.80 0.036
NYEARS	+	0.01	0.68 (ns)	0.06	2.28 0.011
CMS/TTA	±	0.61	0.48 (ns)	-0.53	-0.31 (ns)
ASSETS	+	0.18	0.21 (ns)	2.10	2.23 0.013
RES/CAP1	–	-0.26	-1.38 0.084	-0.58	-1.92 0.027
BONUS1	+	1.56	6.58 < 0.001	0.96	2.74 0.003
TAKEOVER	+	1.02	2.23 0.012	-15.32	-0.01 (ns)

[a] The results for 1984–6 are very similar and for brevity are not reported here. They are available from the authors.

[b] Includes cases where a revaluation results from valuations of some assets by the directors and others by an independent valuer.

The results (see Table 7) show that the revaluation method is possibly related to the reason for the revaluation. Firms that are more highly levered and closer to violating debt covenant restrictions tend to have revaluations done by independent valuers; the results are intuitively reasonable, as debt covenants normally require that revaluations be independent. Firms that were larger and those that were more strike-prone tended to have directors' valuations. Firms facing takeover threats were more likely to have revaluations done by independent valuers; this observation is consistent with the former National Companies and Securities Commission's requirement that a target company's disclosure of the market value of its assets be supported by an expert's report.

As for the other reasons for a revaluation, there appears to be no significant difference in the choice between the two valuation methods.

CONCLUSIONS

This study investigated whether variables proxying for contracting/political costs and information asymmetry/signalling explanations could explain why firms voluntarily revalue their fixed assets.

Revaluers were more highly levered, closer to violating their debt covenant constraints, larger, had relatively higher property holdings and lower tax-free reserves. Firms which declared bonus issues were also more likely to revalue, as were those facing a takeover, presumably to frustrate the bidder. In the first period, revaluers operated in industries more prone to strikes while in the second period they enjoyed stronger growth prospects. Thus, the results are consistent with the proposition that an asset revaluation lowers the probability of a wealth transfer arising from contracting and political costs and conveys a signal to the users of financial statements.

Despite the statistical significance of the model, the level of the *R*-squared suggests it is far short of providing a complete explanation of the revaluation decision. Misspecification of the theoretical constructs is probably one reason for the modest explanatory power: for example, we used imperfect proxies for the strike-proneness of the industry, the threat of a takeover, the level of tax-free reserves relative to paid-up capital, and financial slack. Other relevant variables, such as the influence of the general state of the economy on the revaluation decision, have not been explicitly modelled. For example, it is likely that the level of economic activity affects the firm's incentives to revalue, through its effect on the demand for slack, the profitability of the business, the firm's industrial climate and so on. We leave these issues for future research.

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Asset Revaluations and the Mitigation of Underinvestment

Asset write-ups or revaluations are a common feature of Australian accounting and reporting practice. This paper adopts the perspective that efficiency rather than opportunism is the reason for revaluations. It argues asset revaluations are a low-cost mechanism for mitigating underinvestment problems induced by the presence of risky debt and exacerbated by the manner in which conventional borrowing limitations are written. It is hypothesized that revaluation should be positively related to the presence of growth opportunities, financial leverage and the presence of borrowing limitations; and negatively related to a firm's ability to finance growth internally. The empirical results generally support the hypothesized relationships.

Key words: Fixed assets; Incentives; Management; Revaluation.

Write-ups of book values or asset revaluations are a common feature of traditional accounting in Australia. Between 1949 and 1972 the average frequency of revaluation by listed public companies was 7.4 per cent per annum (Leech, Pratt and Magill, 1978). Between 1972 and 1985 the frequency increased to an average of 23.8 per cent per annum (Whittred and Chan, 1986). Although asset revaluations are pervasive there is no real explanation for this phenomenon.[1] This paper provides a preliminary analysis of the issue using a costly contracting framework. The basic argument is that asset revaluations provide a relatively low-cost mechanism for reducing a form of the underinvestment problem first identified by Myers (1977).

Myers (1977) observes that the value added from any new project is shared with existing debtholders and the riskier this debt the greater the proportion of the value added they receive. If equityholders' share of the value added declines to the point where it is less than the equity contribution required to undertake the

[1] Revaluations are also common in the United Kingdom (Standish and Ung, 1982) and New Zealand (Emanuel, 1989). In contrast, the practice has been virtually extinct since at least 1940 in the United States. This occurred initially without explicit regulation from either the SEC or the accounting profession. The change appears to have been effected by SEC staff using their administrative discretion to discourage 'write-ups' in documents filed to support the registration of prospectuses or securities (refer Walker, 1983, 1992; Zeff, 1972, pp. 156–60). Canadian practice has mirrored that in the United States since at least 1955 (Calder, 1970).

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project, underinvestment results. That is, projects which may promise a positive NPV from the viewpoint of the firm as a whole (i.e., both debtholders and equityholders), can have a negative NPV for the equityholders.

Contractual mechanisms designed to control aspects of the underinvestment problem have been extensively analysed in the financial economics literature. Myers (1977), Smith and Warner (1979) and Kalay (1982) argue that contractual restrictions on dividends help control the problem by forcing firms to retain funds and undertake investment projects. Similarly, debt maturity (Myers, 1977), sinking funds (Smith and Warner, 1979), security provisions (Stulz and Johnson, 1985), leasing (Smith and Wakeman, 1985), insurance (Mayers and Smith, 1987) and captive finance subsidiaries (Mian and Smith, 1989) have all been analysed as contractual devices designed to reduce underinvestment. The present study adds to this literature by illustrating how the incorporation of a revaluation option in a debt contract can reduce underinvestment incentives induced, at least partly, by the way in which conventional borrowing limitations are written. At the same time it provides an explanation for asset revaluations that does not rely on managerial 'opportunism'.

INSTITUTIONAL BACKGROUND

Asset Revaluations

In Australia over the time period of this study (1980–4), decisions as to which non-current assets to revalue, when to revalue and who is to perform the revaluation (directors or independent valuers) were entirely at managements' discretion.[2] While revaluations *per se* were, and still are, unregulated, given that a revaluation is proposed, AAS10, *Accounting for the Revaluation of Non-Current Assets*, specifies (a) that the entire class of assets to which the revalued asset belongs should be revalued, and (b) the accounting procedures to be adopted. AAS10 also requires that upward revaluations be taken directly to an 'asset revaluation reserve'. In contrast, downward revaluations are taken directly through income.[3] Where a depreciated asset is revalued, the accumulated depreciation is credited to the asset account to which it relates, and the net amount of the asset is restated to the amount of the revaluation. Thus, while an upward revaluation typically has no current period income effects, it will generally have negative future period effects through depreciation on the revaluation increment (assuming no revision in the estimate of useful life or salvage value). The revaluation clearly affects current period balance sheet aggregates (shareholders' funds, distributable reserves and, typically, non-current assets) and any ratios calculated therefrom.

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[2] Since October 1986 the Companies Code has required companies to revalue land and buildings every three years.

[3] The exception to this rule is 'reversals'. A reversal of a previous revaluation should, so far as possible, be a reversal of the initial entry. Thus, a devaluation of a previous revaluation goes through the reserve; the excess (if any) through income. Conversely, a revaluation of a previously devalued asset would go through income to the extent of the devaluation, with the excess going to the reserve.

Revaluations have no implications for a firm's tax liability. Tax depreciation continues to be based on the initial acquisition cost using scheduled rates.

Accounting-Based Restrictive Covenants[4]

The monitoring provisions in Australian trust deeds (indentures) rely on financial statements drawn up on the basis of a consolidation of the borrowing company and its guarantors. These consolidations are drawn up in accordance with 'usual accounting practice' prevailing at the date of the calculation and not at the date of issuance of the debt (i.e., using rolling rather than fixed GAAP). Negotiated modifications take the form of 'bottom line' adjustments and generally comprise the inclusion (exclusion) of specific items in (from) total liabilities (total tangible assets). Leftwich (1983) observes that the effect of these adjustments in U.S. indentures is to reduce management's ability to employ accounting techniques which relax restrictive covenants. Whittred and Zimmer (1986) argue the adjustments observed in the Australian contracts have the same effect and, as in the U.S., are more common in private than public debt contracts.

With few exceptions, Australian companies covenant that: (a) total external liabilities will not exceed X per cent (normally sixty) of total tangible assets; and (b) total secured liabilities will not exceed Y per cent (normally forty) of total tangible assets. If the proposed issue is a debenture issue, as distinct from an unsecured or convertible note issue, it will also typically require that: (c) liabilities ranking in priority to the proposed issue will not exceed Z per cent (usually ten or fifteen) of total tangible assets.[5]

With the exception of an interest cover test, which exists in about 33 per cent of debenture issues, these are the only accounting-based covenants in Australian public debt contracts.[6] Each of the limitations on liabilities must be met concurrently and, with the exception of the interest cover test, they operate as *maintenance* covenants. That is, management covenants that at *any point in time* secured liabilities, liabilities ranking in priority to secured liabilities and total liabilities will not exceed the agreed-upon proportions of total tangible assets. Violation of any of these covenants constitutes default, upon which event any floating or equitable liens 'crystallize' or 'fix upon' the firm's assets, and it is no longer possible for management to deal with the collateralized assets in the ordinary course of business; the creditor's consent being required.

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[4] The evidence on Australian practice is taken from Whittred and Zimmer (1986) and Tay and Stokes (1988), who examine Australian public trust deeds in a manner analogous to U.S. surveys by Smith and Warner (1979) and Begley (1989).

[5] There is a legal requirement (S. 154(1) of the Companies Code) that all companies which 'borrow' through an invitation to the public must do so under the terms of a trust deed which contains a borrowing limitation. The limitation is not specified but is almost universally of the above form partly because of Stock Exchange requirements, partly because of the influence of the major institutional lenders' standard practice. Private placements contain very similar provisions.

[6] Australian debentures are collateralized, typically by a floating or equitable lien over the assets of the borrowing corporation and its guarantors (usually all wholly owned subsidiaries). Unsecured and convertible notes require a full set of cross-guarantees, but these are not supported by liens. This relatively heavy degree of collateralization might partially explain the scarcity of accounting-based covenants.

HYPOTHESES

While restricting the amount of debt relative to total tangible assets in the manner discussed above serves directly to limit the claim dilution problem and, indirectly, the dividend problem,[7] it does not appear to have been widely recognized that these benefits come at a cost. In particular, they restrict firms' investment opportunity sets. To illustrate, assume a firm is confronted with two mutually exclusive projects with equal net present values and consider the following scenarios:

> Scenario 1: one of the projects is financed with a high proportion of debt; the other a low proportion.
>
> Scenario 2: the projects are financed with the same proportion of debt, but one requires investment in assets which do not qualify for the purposes of the constraint.

In both cases the closer to the constraint the firm is, the less likely it is to be strictly indifferent to these projects. It is only necessary for either the highly levered project, or that involving the investment in non-qualifying assets, to have a higher present value for a form of underinvestment to arise. That is, the higher present value project will be passed over because of its implications for the firm's trust deed.

Investments that are totally excluded from the definition of tangible assets include those that would be classified as intangibles under GAAP (e.g., research and development, goodwill) and those that cannot be 'satisfactorily' secured by liens in favour of the trustee (typically overseas assets). Indeed, the restrictions apply with particular severity to investments in overseas subsidiaries. Guarantees of such subsidiaries' debt qualify for inclusion in total liabilities, but the subsidiaries' assets typically do not qualify for inclusion in total tangible asets. Likewise, investments in certain classes of marketable securities, in particular, investments in non-guarantor related companies, typically receive only partial recognition in the calculation of tangible assets.[8]

Possible solutions to this problem include shareholders covenanting that they will accept all positive present value projects, refunding the debt or negotiating side payments. However, as Smith and Warner (1979, p. 125) observe, the first of these 'solutions' is unlikely to be enforceable. In the second case, the underinvestment problem cannot be severe (by definition), and in the third it is unlikely that debtholders and shareholders would easily reach agreement on how the benefits of new projects were to be shared (Stulz and Johnson, 1985, p. 516). More feasible solutions include shortening the debt maturity (Myers, 1977), using sinking funds or making the debt callable (Smith and Warner, 1979) or renegotiating the contract. However, Australian publicly placed debt is typically long term (ten to twenty years), non-sinking fund, and non-callable. Also, the majority requirements for amendments to the deed (75 per cent in value of the outstanding debentures) are such that renegotiation is usually impractical. Finally, Australian trustees have wide discretionary powers in relation to waiving breaches of the deed, including the waiver of defaults. However, without recourse to debtholders, the latter power is exercised cautiously (Armitage, 1986, pp. 308–10).

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[7] Claim dilution and the dividend problem are discussed in Smith and Warner (1979, p. 136). Borrowing restrictions indirectly limit dividends because their payment affects tangible assets. However, it is usual to define one of the events of 'default' as the payment of dividends while an interest payment has 'become payable and remains unpaid'. There is also a global statutory restriction imposed by S. 565(1) of the Companies Code that 'No dividend shall be payable to the shareholder of any company except out of profits'.

[8] Official List Requirements of the Australian Stock Exchange permit the inclusion of investments in non-guarantor related companies provided they are in listed shares over which a first charge in favour of the trustee has been given. The investment must be brought to account at the 'lower of book value and market value', and then only to the extent that it does not exceed 15 per cent of the asset base (calculated without excluding the investment) as determined for the purposes of the borrowing limitation.

There is one particular feature of Australian trust deeds which reduces the severity of the problem. The contracts are written, *ex ante*, containing an explicit revaluation option. Typically, the deeds define total tangible assets to exclude (Whittred and Zimmer, 1986, p. 25):

> any amount by which the book value of any tangible asset is written up subsequent to the annual balance date immediately preceding the date of the Deed, *except* where such writing up is made in accordance with and so that the book value does not exceed a valuation by an independent valuer approved by the Trustee. (*emphasis added*)

Under these circumstances asset revaluations provide a relatively low-cost means of mitigating this form of underinvestment — either by facilitating investment in non-qualifying assets or by increasing a firm's ability to issue debt without violating any covenants (Haynes, 1977, p. 188; Berg, 1978, p. 52).[9] Of course, revaluations come at a cost — the valuer's fee, the opportunity costs of directors'/managers' time and audit/trustee review. Over the period of this study the Australian Institute of Valuers charged around 0.5 per cent of appraised value for properties up to $30,000. This reduced as appraised values increased. For revaluing firms the benefits presumably outweigh these costs.

The option to revalue upwards can only be exercised if the value of assets-in-place has increased. Thus the contracts directly link a firm's borrowing capacity to the value of its assets-in-place in a manner consistent with Myers' (1977) arguments. The requirement for trustee approval of the valuer reduces management's ability to revalue opportunistically, as does the fact that the revaluation must ultimately be audited.

In summary, Australian companies have a relatively restrictive technology for (debt) contracting over assets. Conventional borrowing limitations must be met concurrently, operate as maintenance provisions and (at least in the case of publicly placed debt) are extremely difficult to renegotiate or waive. While these restrictions serve to limit claim dilution and (indirectly) dividend problems, they also create a form of underinvestment problem.

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[9] Revaluations can serve also to reduce another form of contracting cost. Recall that the borrowing limitations are maintenance covenants; that is, they must be met at every point in time and not simply at the point at which a subsequent debt issue is proposed. Maintenance covenants increase the probability of a technical default, say, due to unexpected changes in the accounting technology upon which the tests of compliance depend. While we have no direct evidence on the magnitude of the costs involved, it seems plausible that, relative to renegotiating the deed, recapitalizing or defaulting, an asset revaluation is likely to be a low-cost solution to this problem.

If revaluations are motivated by attempts to maximize firm value (i.e., to avoid passing over profitable opportunities), what type of firms are most likely to revalue? Myers (1977) showed underinvestment incentives arise in the presence of risky debt. The preceding discussion shows these incentives are exacerbated by conventional borrowing limitations. They also increase as financial leverage increases, since the riskier the debt the greater the share of any added value it receives. The problem becomes more costly if the growth opportunities imply either high leverage and/or investment in 'non-qualifying' assets. Conversely, the costs associated with underinvestment can be avoided if a firm retains enough internally generated funds to cover its growth opportunities. Hence, the value of the revaluation option increases as the availability of internally generated funds diminishes. Thus, it is hypothesized that:

> The likelihood of revaluation is positively associated with: (a) the existence of borrowing limitations, (b) financial leverage, (c) the value of growth opportunities, and negatively associated with (d) cash retention.

The null is that the phenomenon of asset revaluation is a purely random one — that it bears no relationship to attributes of a firm's investment opportunity set (growth options) or its financing policy (the use of borrowing limitations, leverage and cash retention).

Alternative plausible explanations for revaluations include the operation of bonus plans, the reduction of political costs, regulation, takeovers, taxes and default avoidance. None of these is explicitly evaluated: the lack of publicly available data on the structure of Australian bonus plans precludes their investigation[10]; the ambiguity of implications of revaluations for political costs precludes their examination[11]; banks, finance and insurance companies were excluded because their asset (and capital) structures are fundamentally different from industrials and because companies in these industries are regulated and this could potentially affect their revaluation policy. Revaluations are often undertaken in response to (usually hostile) takeover bids (Walker, 1973; Trotman, 1981) and revaluations coinciding with such bids were also excluded. Further, as revaluations have no direct tax implications this aspect can be ignored and, while revaluations can clearly be used to avoid a technical default, the sheer frequency of this phenomenon (25 per cent per annum) and the results in Table 3 (discussed below) suggest this is unlikely to be the principal determinant of the revaluation decision.[12] Finally, while large firms might be more likely to revalue than small firms because of economies of scale in revaluing, these benefits would need to be proportionately larger than for small firms. The significance of size is thus ultimately an empirical question on which we can shed some light.

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[10] If Australian compensation plans are structured along U.S. lines (Healy, 1985) and if compensation committees do not adjust for the impact of the revaluation, then the plans provide a potentially strong reason not to revalue; that is, the revaluation is income and rate of return reducing.

[11] For example, is it rate of return or size that makes a firm politically visible? The effect of a revaluation works in opposite directions here. Or is it the reported tax rate (as in Wong, 1988)? If the latter, it is our (admittedly casual) observation that, over the time frame of this study, corporate taxation was not a particularly sensitive issue in Australia.

DATA

We randomly selected 200 companies from the industrial list of the Australian Stock Exchange for each of the five years 1980–4. Within each year the sampling occurs without replacement. However, the sampling across time occurs with replacement subject to the constraint that a company once identified as a revaluer (non-revaluer) could not also appear as a non-revaluer (revaluer). Table 1 provides further details.

TABLE 1

SAMPLE CONSTRUCTION: LISTED INDUSTRIALS
(EXCLUDING BANKS, FINANCE AND INSURANCE COMPANIES)
FINANCIAL YEARS ENDING IN 1980–4

Year		Total
Initial sample		1000
Less		
Companies not on CRIF files	107	
Devaluations	13	
Missing data on cause of variation in revaluation reserves	50	
Revaluations coinciding with takeover offers	45	
Revaluers reappearing as non-revaluers	129	344
Final sample		
Revaluers	160	
Non-revaluers	496	656

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[12] Additionally, in a pilot study to this paper (Whittred and Chan, 1986) we identified thirty-eight revaluers (out of a random sample of 100 firms) that had trust deeds supporting public debt. For twenty-nine of these firms we could obtain copies of the relevant restrictions. Nine companies *appeared* to have violated the restriction on total liabilities. The financial controller of each of these firms was phoned to discuss the revaluation. As the events were between three and six years old the company officers appeared to be willing to talk 'openly' about them. In only one instance was it admitted that avoidance of a technical default was the reason for the revaluation. We emphasize 'appeared' because of potentially significant measurement error. This error arises in the interpretation and calculation of the adjustments to be made to the defined constraints and because we are working from published financial statements (i.e., consolidations of all 'subsidiaries', which is not necessarily a consolidation of all 'guarantors').

Financial data for all companies was taken from the CRIF tape.[13] Companies not on this file and devaluations result in a 15.7 per cent reduction in sample size. Variation in the Asset Revaluation Reserve (item no. 225) is used to identify revaluers in any year. While increments in this account are only explainable as revaluations, a decrement could also be associated with an asset revaluation. One example is a concurrent bonus issue/stock dividend out of the reserve and in an amount greater than the revaluation. Another is the sale of a previously revalued asset in which the increment is reversed prior to the recognition of any gain/loss on sale. Thus, *any* variation in the asset revaluation reserve was investigated by recourse to the original financial statements.

The resulting sample comprises some 160 revaluers and a potential control group of 496 non-revaluers.[14] With the exception of diversified resources, the final sample includes representatives from all eligible Australian Stock Exchange industry categories in both revaluing and non-revaluing categories. The industry representation of the final sample is not significantly different from the initial sample. Likewise, the relative frequency of revaluation across industries and time is not affected by the data restrictions.

Table 2 provides descriptive data for the pooled sample on the types of assets revalued and by whom the revaluations are performed. These data are taken directly from firms' annual accounts and notes thereto. Note that the total number of revaluations here exceeds that in Table 1 because, where possible, composite valuations (e.g., concurrent revaluations of land/buildings and plant/equipment) have been broken down into their constituent parts. The majority of revaluations

TABLE 2

ASSET REVALUATIONS: BY CLASS OF ASSET AND TYPE OF REVALUER

	Valuation type			
Asset class	Independent	Directors	Composite	Totals
Land and buildings	86	53	2	141
Plant and machinery	12	13	0	25
Investments	4	20	0	24
Other (e.g., forests, licences, quarries)	2	2	0	4
Composite	2	3	7	12
Totals	106	91	9	206

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[13] The Centre for Research in Finance at the Australian Graduate School of Management maintains an annual report record covering approximately 900 to 1,000 listed industrials each year.

[14] There are 129 (299) separate companies in the sample of 160 (496) revaluers (non-revaluers).

(68.4 per cent) relate to land and buildings/property and the majority of these (61.0 per cent) are performed by independent valuers.[15] In contrast, investments are almost exclusively revalued by directors, while plant/machinery revaluations are evenly distributed. A chi-square test on asset class by revaluer type indicates a significant association between these variables ($\chi^2 = 15.9$, df = 3, $p < 0.001$).[16] Similar results are reported in McMillan (1989).

The average asset revaluation represents some $7.7 million or 7.73 per cent of total assets; 26.3 per cent of earnings legally available for distribution as a dividend (hereafter distributable reserves). The median values of these statistics, at $1.42 million, 3.98 per cent and 12.89 per cent respectively, are somewhat smaller, though nonetheless consistent with a material financial statement impact.

RESEARCH METHOD

Our 'underinvestment' hypothesis implies that revaluing firms should be characterized by the existence of borrowing limitations, an increase in financial leverage and growth opportunities and a reduction in cash reserves in the year they elect to revalue. The appropriate design might thus appear to be a time-series design with time defined relative to the revaluation date.[17] But firms that revalue ought to differ from those that do not along the same dimensions, suggesting a cross-sectional design. There are problems with both designs that lead us to report the results of both forms of analysis.

A time-series design does not rule out the possibility that any changes observed in revaluing firms were not also occurring in the 'average' firm (e.g., is an observed change in leverage firm-specific or part of an economy-wide increase in debt?). While a cross-sectional design avoids this issue, it raises the question of what constitutes an appropriate control group. While the answer seems simple — firms that could have revalued but chose not to — identifying such firms is problematic. It is largely for this reason that we rely on our randomly selected sample of 496 non-revaluers as a 'benchmark' portfolio. Of course, this issue does not arise in the time-series design.

Proxies for the relevant variables were constructed as follows. Since with few exceptions Australian debentures, unsecured and convertible notes include borrowing limitations, coding a non-zero dollar value in any of these categories as 1 (zero otherwise) ought to capture the existence of such constraints (BLIM). Consistent with typical trust deed borrowing limitations, leverage is defined as total liabilities over total tangible assets (TL/TTA). For the reasons discussed in footnote 12 we are unable to measure a firm's 'proximity' to its borrowing limitations with confidence. Rather, we rely on Press and Weintrop's (1990) result that proximity is significantly correlated to leverage. Internal reserves of cash were proxied using the proportion of cash and marketable securities in a firm's total asset base (CMS/TA) at balance date. The absence of fund statement data precludes the use of more direct proxies. As in Smith and Watts (1986), the premium reflected by the difference between market and book value of equity (MEQ/BEQ) is utilized as a proxy for the presence of growth opportunities. Note that all comparisons undo the effect of revaluation on affected firms through the simple reversing entry which debits shareholders' funds and credits the relevant asset account.

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[15] It is common for directors to revalue land and buildings to the value appraised by the valuer-general for rating (tax) purposes though the revaluation will not always be described as such. Where this fact was ascertainable from the accounts the revaluation was classified as independent. The lack of consistent disclosure here implies that the proportion of independent valuations in Table 2 is understated.

[16] A 3 × 2 contingenncy table was constructed by deleting the last row and column in Table 2 (those with either multiple classes of assets revalued or revaluations by both directors and independent valuers), and combining the 'investments' and 'other' categories.

[17] The majority of revaluations were dated as at the last month, if not the last day, of the financial year.

RESULTS

Time Series

Results of a univariate time-series analysis appear in Table 3. Missing observations account for the minor variation in sample size. While it is not apparent from the

TABLE 3

STATISTICS ON THE EVENT TIME RELATION BETWEEN ASSET REVALUATION, BORROWING LIMITATIONS, FINANCIAL LEVERAGE, GROWTH OPPORTUNITIES AND CASH RETENTION; POOLED DATA: 1980–4

	Year preceding revaluation	Year of revaluation	One-tailed probability
Variable	Mean, median, SD, *n*	Mean, median, SD, *n*	Paired-*t* Wilcoxon
TL/TTA	0.495	0.520	
	0.507	0.530	
	0.157	0.170	0.000
	160	160	0.001
MEQ/BEQ	0.900	1.156	
	0.784	0.879	
	0.498	1.008	0.000
	158	159	0.000
CMS/TA	0.039	0.037	
	0.014	0.014	
	0.055	0.058	0.250
	160	160	0.093

TL/TTA = Book value of total liabilities/total assets (less intangibles) adjusted for any asset revaluation

MEQ/BEQ = Market value of equity (equivalent ordinary shares × balance date price)/total shareholders' funds, adjusted for any asset revaluation

CMS/TA = Book value of cash and marketable securities/total assets, both adjusted for any asset revaluation.

table, the majority of revaluing firms have borrowing limitations (BLIM) in place (52 per cent in t_{-1}, 62 per cent in t_0) and there is also a significant association between revaluation and the issue of new debt containing such restrictions (10 per cent of cases).

Sample firms, as predicted, experience a significant increase in book value leverage (TL/TTA) in the year they elect to revalue. However, the mean (median) values of TL/TTA lie reasonably comfortably within conventional borrowing limitations. At the same time market-value leverage — defined as total liabilities/(total liabilities plus year-end market value of equity) — actually declined slightly from a mean (median) value of 0.54 (0.56) to 0.52 (0.55) respectively. Thus while the book value of total liabilities is increasing more rapidly than total tangible assets, it is increasing less rapidly than the market value of equity. The latter observation is also consistent with the significant increase in our proxy for growth opportunities (MEQ/BEQ) in the revaluing year. The proxy for cash reserves (CMS/TA) exhibits an insignificant decrease in the revaluation year.

Cross-Section

Results of a univariate comparison of revaluing firms against the 'benchmark' portfolio of 436 non-revaluers appear in Table 4. Once again, missing observations account for the variation in sample size. Overall, the results are consistent with those of our time-series analysis. Revaluers are approximately 60 per cent more likely than non-revaluers to have borrowing limitations in place; the respective proportions being .62 and .39 ($\chi^2 = 23.8, p < 0.001$). Revaluers are also, on average, some 8–10 per cent more highly levered.[18] The ratio of market to book value of net assets is also some 9–18 per cent higher. While the significance of this difference appears to depend on the statistic chosen, a natural log transformation of this variable results in a t-statistic of 3.37 ($p = 0.001$). Finally, revaluers have year-end cash reserves which are significantly lower (between 30 and 50 per cent) than those of non-revaluers.

Lower cash reserves and higher leverage imply that revaluing firms are likely to have fewer degrees of freedom to react to changes in their investment opportunity set than non-revaluing firms. Revaluation provides some relief from this position.

The impact of each of these variables was also assessed by including them in the event-time cross-sectional Probit regressions indicated in Table 5. The dependent variable in each regression was a 0–1 dummy variable representing revaluation status (0 = non-revaluer; 1 = revaluer). The results of the full Model 1 support our univariate analysis, with the exception of the leverage variable. The reduced Models 2–4 throw some light on the relationship between BLIM and TL/TTA which, not surprisingly, exhibit the largest correlation ($\rho = 0.31$) between any of

[18] Revaluers are, on average, larger than non-revaluers in both book and market value terms. However, at conventional levels there are no significant differences between the groups in the proportion of property, plant and equipment, distributable reserves (both scaled by total assets) or market value leverage (total liabilities/market value of firm). Revaluers also experience more rapid growth in leverage than the average (non-revaluing) firm. An analysis of the cross-section of first differences indicates significance at $p < 0.01$ for both Student's-t and Mann–Whitney comparisons.

TABLE 4

STATISTICS ON THE CROSS-SECTIONAL RELATION BETWEEN ASSET REVALUATION, BORROWING LIMITATIONS, FINANCIAL LEVERAGE, GROWTH OPPORTUNITIES AND CASH RETENTION; TIME = t_0; POOLED DATA: 1980 4

Variable	Revaluers	Non-Revaluers	One-tailed probability
	Mean, median, SD, n	Mean, median, SD, n	Student's-t[a] Mann-Whitney
TL/TTA	0.520	0.469	
	0.530	0.494	
	0.170	0.213	0.003
	160	436	0.002
MEQ/BEQ	1.156	1.056	
	0.879	0.739	
	1.008	1.601	0.230
	159	406	0.000
CMS/TA	0.037	0.086	
	0.014	0.020	
	0.058	0.151	0.000
	160	436	0.001

[a] Pooled variance estimates.

TL/TTA = Book value of total liabilities/total assets (less intangibles) adjusted for any asset revaluation

MEQ/BEQ = Market value of equity (equivalent ordinary shares × balance date price)/total shareholders' funds, adjusted for any asset revaluation

CMS/TA = Book value of cash and marketable securities/total assets, both adjusted for any asset revaluation.

the independent variables (including size). In the model without the proxy for borrowing limitations, the leverage variable enters significantly. Thus, consistent with Duke and Hunt (1990) and Press and Weintrop (1990), leverage may be a proxy for the presence of borrowing limitations. Model 4 incorporates an interaction term and suggests that highly levered firms with borrowing limitations are more likely to revalue.

In all models classification accuracy is significantly greater than that of the proportional chance classification model (59.6 per cent). Nevertheless, explanatory power is modest with adjusted R-squares of around 5–7 per cent.

Sensitivity Analysis

The regressions reported in Table 5 were re-run using OLS.[19] As a dichotomous dependent variable implies heteroscedasticity of the OLS errors, we calculated Student's-t statistics for this model using White (1980) adjusted standard errors.

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[19] See Hagerman and Zmijewski (1979) for a discussion of the application of Probit in accounting choice studies and Noreen (1988) for a comparison of Probit and OLS hypothesis tests.

TABLE 5

CROSS-SECTIONAL PROBIT PARAMETER ESTIMATES ON LEVELS (ASYMPTOTIC *t*-STATISTICS) DEPENDENT VARIABLE 0 = NON-REVALUER, 1 = REVALUER; POOLED DATA: 1980–4; REVALUATION YEAR (t_0 IN EVENT TIME); NUMBER OF VALID OBSERVATIONS = 565

Explanatory variable	Predicted sign	Coefficient (*t*-statistics) Model 1	Model 2	Model 3	Model 4
Intercept	?	-0.740 (-3.770)*	-.616 (-6.398)*	-.674 (-3.508)*	-0.597 (-6.314)*
BLIM	+	0.444 (3.649)*	.468 (3.982)*	—	—
TL/TTA	+	0.259 (0.726)	—	.597 (1.757)**	—
LN(MEQ/BEQ)	+	0.327 (3.798)*	.334 (3.899)*	.308 (3.642)*	0.323 (3.798)*
CMS/TA	–	-2.499 (-3.070)*	-2.651 (-3.340)*	-2.667 (-3.358)*	-2.552 (-3.241)*
BLIM × TL/TTA	+	—	—	—	0.776 (3.820)*
Likelihood ratio statistic[a]		48.9	48.4	35.5	47.0
(probability)		(0.000)	(0.000)	(0.000)	(0.000)
% correctly classified		71.8	71.5	70.8	71.3

* Null hypothesis rejected at 0.005 level, one-tailed test.

** Null hypothesis rejected at 0.05 level, one-tailed test.

[a] Used to test the hypothesis that all coefficients are simultaneously equal to zero. Under this null hypothesis, the statistic has an asymptotic distribution which is chi-square with degrees of freedom equal to the number of explanatory variables.

BLIM = 1 if positive $ value for any of debentures, unsecured or convertible notes, 0 otherwise

TL/TTA = Book value of total liabilities/total assets (less intangibles), adjusted for any asset revaluation

MEQ/BEQ = Market value of equity (equivalent ordinary shares × balance date price)/total shareholders' funds, adjusted for any asset revaluation

CMS/TA = Book value of cash and marketable securities/total assets, both adjusted for any asset revaluation.

As with the Probit regressions, these tests are asymptotic. The results were almost identical. The incorporation of a size variable (book or market) in either form of regression changes little. Indeed the size difference indicated in footnote 18 disappears in a multivariate context, and it thus appears that if there are economies of scale in revaluing, they are unlikely to be major. Likewise, defining the leverage and cash retention proxies in market rather than book values changes little.

Recall that our sampling across time occurs with replacement. Restricting the analysis to a reduced set of unique revaluers/non-revaluers once again provides very similar results. We also employed a 'matched portfolio' approach by randomly selecting control groups of 150 non-revaluers from the initial set of 464. The results remain unchanged, though the per cent correctly classified increases to 77 per cent relative to the proportional chance model of 50 per cent.

The significance tests reported in Table 5 rely on asymptotic properties. To test the sensitivity of the Probit results to possible violations of the large-sample assumptions we employed the randomization test described in Noreen (1989). Thus, each of the explanatory variables and the likelihood ratio statistic is compared to an empirical distribution generated under the condition that the null hypothesis is true. The procedure is as follows. The dependent variable is shuffled relative to the matrix of independent variables (thus ensuring its stochastic independence) and the Probit regression is re-run, producing pseudo-coefficients for each explanatory variable. This procedure is performed 100 times, thereby generating an empirical distribution under the null hypothesis. The significance of each of the original coefficients in Table 5 is assessed relative to this empirically generated distribution, the null being rejected if the original coefficient is unusually large relative to this distribution. Table 6 reports the results. Once again our original

TABLE 6

RANDOMIZATION TEST OF THE PROBIT RELATIONS DEFINED IN TABLE 5, MODEL 1
(NUMBER OF SHUFFLES OF THE DEPENDENT VARIABLE = 100)

Variable	Predicted sign	Actual test statistic	Mean (Std. Dev'n) of pseudo test statistic	Times [4] greater (less) than [3]	One-tailed probability[a]
BLIM	+	.444	.012 (.113)	0	.009
TL/TTA	+	.259	-.007 (.323)	23	.238
LN(MEQ/BEQ)	+	.327	.005 (.080)	0	.009
CMS/TA	-	-2.499	-.081 (.539)	0	.009
Likelihood ratio test[b]		48.9	5.4	2	.030

[a] The one-tailed probability is $(nge + 1)/(NS + 1)$, where *nge* is the number of times the pseudo test statistic is greater (less) than the actual test statistic when a direct (inverse) relation is hypothesized, and *NS* is the number of shuffles.

[b] Used to test the hypothesis that all coefficients are simultaneously equal to zero. Under this null hypothesis, the statistic has an asymptotic distribution which is chi-square with degrees of freedom equal to the number of explanatory variables.

BLIM = 1 if positive $ value for any of debentures, unsecured or convertible notes, 0 otherwise

TL/TTA = Book value of total liabilities/total assets (less intangibles), adjusted for any asset revaluation

MEQ/BEQ = Market value of equity (equivalent ordinary shares × balance date price)/total shareholders' funds, adjusted for any asset revaluation

CMS/TA = Book value of cash and marketable securities/total assets, both adjusted for any asset revaluation interpretation remains unchanged. Each of the explanatory variables, with the exception of leverage, is highly significant.

We examine the sensitivity of the analysis to the 'materiality' of the asset revaluation. Materiality was operationalized as a median split on both revaluation as a percentage of total tangible assets and legally distributable reserves. We also examined the sensitivity of the analysis to both the type of revaluation (land and buildings vs. other) and the type of revaluer (independent vs. director). The basic model was relatively robust across the categories.

Finally, Model 1 reported in Table 5 was re-run separately for each of the Stock Exchange industry classifications for which there were more than thirty observations. The basic model performed at least as well as the naive model in all cases. However, there were two industries (media, retail) in which none of the variables was significant. BLIM and LN(MEQ/BEQ) were significant in the majority of the remaining instances; CMS/TA was not. In short, the relative significance of the explanatory variables is at least partly dependent on industry classification (or factors correlated with it).

CONCLUSIONS

It would be facile to conclude that managers revalue when the benefits from doing so exceed the costs. We have tried to illustrate the nature of these costs and benefits, arguing that revaluations are a low-cost mechanism for reducing the losses associated with a form of underinvestment problem induced by the manner in which Australian debt contracts are written. Our evidence indicates that firms placing themselves under the relatively strict governance structure represented by a conventional trust deed incorporating explicit borrowing limitations are more likely to revalue, particularly if they are also highly levered. These attributes, in conjunction with low cash reserves, imply that revaluing firms are likely to have fewer degrees of freedom to respond to changes in their investment opportunity sets. In this context we also note that revaluers appear to have more growth opportunities than non-revaluers.

Asset revaluations are a form of voluntary accounting policy choice (i.e., of the valuation base for certain assets). Our discussion and results point to the endogeneity of such choices.

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SCOTT HENDERSON AND JENNY GOODWIN

The Case Against Asset Revaluations

The upward revaluation of non-current assets is a common feature of contemporary accounting in Australia. This paper presents a case against the practice. The effects of revaluations are examined and possible reasons why firms revalue are considered. It is argued that asset revaluation is theoretically unsound, being inconsistent with the accounting structure within which it occurs. It is concluded that there are significant costs but few obvious benefits associated with revaluation.

Key words: Fixed assets; Revaluation; Valuation.

Asset revaluations are accepted virtually without question as a generally accepted Australian accounting practice. This article presents a case against the practice. It is argued that, not only is the practice theoretically unsound, but that there are few practical benefits arising from its use. Indeed, revaluations have wiped millions of dollars from the reported profits of Australian companies. The article urges a critical review of the whole practice as a matter of urgency.[1]

It is significant that asset revaluation is not generally permitted in North America.[2] In the United States, APB Opinion No. 6 (1965) states that: 'Property, plant, and equipment should not be written up by an entity to reflect appraisal, market or current values which are above cost to the entity'. Furthermore, the SEC has effectively outlawed the upward revaluation of assets in *Accounting Series Release No. 4* (1938) which states: 'Financial statements...prepared in accordance with accounting principles for which there is not substantial authoritative support will be presumed to be misleading or inaccurate despite disclosures contained in the certificate of the accountant or in footnotes to the statements'. While this is not a direct reference to revaluations, it is accepted that the write-up of assets is an accounting principle which does not have 'substantial authoritative support'.

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[1] The article addresses only the practice of revaluing non-current assets subsequent to acquisition. The issue of assigning fair value to individual assets in a business acquisition is not considered.

[2] The main exception to this relates to quasi reorganization where assets can be revalued to reflect fair value. However, in this situation, upward revaluations would be rare and it is far more likely that a non-current asset would be written down to reflect a lower fair value. Walker (1992) discusses the effect of ASR4 in detail.

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Financial statements that include revaluations are regarded as misleading or inaccurate.[3]

The Canadian opposition to upward asset revaluation is expressed in Section 3060 of the *CICA Handbook* (1990). Para. 18 states simply: 'A capital asset should be recorded at cost'. The North American prohibition on upwards asset revaluation is based upon their belief that the practice is not consistent with the principles of historical cost accounting. The valuation procedures, they argue, rely upon judgment and estimates to such an extent that the result is too subjective for inclusion in the accounts. It is not reliable. Historical cost, on the other hand, arguably is more objective and at the date of acquisition of the asset may be regarded as a reasonable or minimal approximation of value. It is the amount which is matched with revenue over the life of the asset. Non-current assets, it is argued, are simply prepaid expenses. As the assets are being held and used and sale is not contemplated, any figure other than original cost is irrelevant. These arguments are familiar to most Australian accountants from the current cost accounting (CCA) debate of the 1970s. It appears they were accepted then and, consequently, CCA was not adopted. They do not, however, appear to be accepted in relatoin to asset revaluations.

LEGISLATIVE AND PROFESSIONAL GUIDELINES

The Australian accounting profession provides very little guidance to practitioners about how the revaluation increment should be determined. Statement of Accounting Standards AAS 10, *Acounting for the Revaluation of Non-Current Assets* (1983) and the equivalent approved standard, ASRB 1010 (1987), are concerned only with how to account for and what to disclose concerning any revaluation. Commentary paragraph (vi) of ASRB 1010 and para. 14 of AAS 10 both make it clear that the accounting standard or statement is only concerned with how to account for revaluations rather than when they should occur and on what basis they should be carried out. AAS 10 (1983) and ASRB 1010 (1987) refer to Sections 269(7) (c) and 267 of the Companies Code as placing 'constraining factors' on the process of revaluation.

In 1991 the Companies Code was replaced by the Corporations Law. Sections 269(7) (c) and 267 become Sections 294(4) and 289 of the Corporations Law. Section 294(4) requires that directors should take reasonable steps to ascertain whether the recorded value of a non-current asset exceeds the amount 'that it would have been reasonable for the company to expend to acquire the asset as at the end of the financial year'. This probably means year-end replacement cost.[4] If it does exceed the replacement cost, then there must be adequate disclosure to ensure that the accounts are not misleading. This suggests that *current replacement cost* is the upper limit to the carrying amount of an asset. In contrast, AAS 10 (1983) and ASRB 1010 (1987) suggest that the carrying amount of a class of assets should not exceed its recoverable amount. ASRB 1010 (1987) defines the 'recoverable amount' of an asset in para. 10 as

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[3] It is acknowledged that the SEC has recently supported a move away from historical cost by advocating that certain investment securities can be 'marked to market' in financial statements. At this stage, the recommendation relates only to monetary assets held by financial institutions and there is no evidence that the SEC is supporting a more general move away from historical cost for non-monetary assets. (See Wyatt, 1991.)

[4] The actual meaning of this phrase is not clear as, arguably, it would not be 'reasonable' to expend more to acquire an asset than the company expects to recover from either its use or sale (i.e., its recoverable amount). We are interpreting the phrase at its face value which suggests replacement cost.

> the net amount that is to be expected to be recovered —
>
> (a) from the total cash inflows less the relevant cash outflows arising from its continued use and through its subsequent disposal; or
>
> (b) through its sale.

Compliance with both the Corporations Law and ASRB 1010 (1987) probably sets a valuation ceiling as the lower of replacement cost or recoverable amount, although the matter is a little confused by reference to both single assets and to classes of assets. This is broadly consistent with ED49, *Accounting for Identifiable Intangible Assets* (ASRB, 1989), which is more explicit about the revaluation of intangibles. Para. 31 states: 'The basis for the revaluation of a class of identifiable intangible assets shall be the lowest cost at which the assets within the class could currently be obtained in the normal course of business, such amount being determined by independent valuation'. The Draft also stresses that the carrying amount of any intangible asset must not exceed its recoverable amount. It would appear that the profession, in this Exposure Draft, is endorsing the lower of replacement cost and recoverable amount as a revaluation ceiling. However, this applies to individual assets rather than to the whole class of assets as required in AAS 10 (1983) and ASRB 1010 (1987).

The limits imposed by ceilings of this type are largely illusory. The determination of replacement cost or recoverable amount depends upon estimate and forecasts which make the process subjective.

Section 289 of the Corporations Law relates to accounting records and implies that there should be acceptable documentation to support a valuation increment. In most cases, companies employ 'experts' to provide valuations. When the revaluation is first reported, the identity of this expert should be disclosed in the accounts (ASRB 1010, para 40). An expert valuation is, as with all valuations, still subjective. The worth of any documentation provided by an expert is a matter for speculation although no doubt it may be of some comfort to auditors.

Directors do not have to obtain an expert valuation and are permitted to place upon the asset their own valuation, described in the accounts as 'Directors' Valuation'. In these cases, the worth of any documentation is questionable. It is interesting to note that the profession is recommending the use of independent valuations for intangibles, presumably because of the level of subjectivity involved in revaluing assets of this nature. It can be argued, however, that the basis for revaluation of all non-current assets should be the same, with differences in estimation being of degree rather than kind.

Schedule 5 of the Regulations (Clause 32) requires certain companies to disclose the current value of their interests in land and buildings. Current value is defined as 'the most recent valuation made within the last 3 years before the end of that financial period'. Where current values are not recorded in the accounts, footnote disclosure is required. No reference is made as to the basis of valuation or to who should undertake the valuation. Directors' valuations are clearly acceptable provided they are not aggregated with independent valuations.

In 1988, the National Companies and Securities Commission issued Policy Statement No. 135, *Revaluation of Non-Current Assets*. The statement extended an earlier policy statement relating to the revaluation of intangible assets only. Prompted by a concern that some revaluations in prospectuses may have provided misleading information to potential investors, it requires that any revaluation in a prospectus must be supported by an independent expert's report. Details of the valuation such as assumptions on which it is based, data used, calculations and valuation methods adopted must be clearly disclosed. However, while the statement refers to valuations appearing in reports in general, it concentrates only on disclosure requirements in prospectuses and does not directly apply to annual financial statements.

It seems reasonable to conclude, therefore, that there is a measurement anarchy with respect to revaluations. Objective rules are lacking and the measurement process rests on the discretion of directors. In the 8 March 1990 issue of *New Accountant*, Walker has written that in the area of asset revaluations, 'Australian accounting rules are among the most lax in the world' (p. 10). We concur.

THE EFFECTS OF REVALUATION

When an asset is revalued upwards,[5] its carrying amount is increased to its agreed 'value' and the revaluation increment is recorded in an 'asset revaluation reserve' account. The revaluation increment is not treated as revenue. For a depreciable asset, the new carrying amount becomes the basis for depreciation in subsequent years.

For a depreciable asset, upward revaluation has the following effects upon the financial statements:

1. Depreciation expense is greater after an upward revaluation, resulting in lower reported profits. This is not merely a movement of profits from one period to another. Expenses are increased, profits are lost and are not regained in subsequent periods.
2. The gain on the eventual sale of the revalued asset is lower because its carrying amount is higher.
3. The sum of the lower profits arising from higher depreciation and the lower gain on sale of the asset is equal to the amount of the revaluation. For example, if an asset is revalued upward by $300,000, then profits over the periods up to and including that in which the asset is sold will be reduced by a total of $300,000. (See the example in Table 1.)

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[5] The Accounting Standards do not allow the revaluation of single assets. The whole asset class should be revalued. For convenience, we will refer to single assets rather than to a class. This method of exposition makes no difference to our conclusions.

TABLE 1

Assume a depreciable asset is purchased at the beginning of year 1 at a cost of $500,000. It has a ten-year useful life with no residual value. Straight-line depreciation is used ($50,000 pa). At the end of Year 4 the asset is revalued by $300,000.

Carrying amount at end of Year 4	$300,000
Asset revalued by	300,000
New carrying amount	600,000
Depreciation over next two years (600,000/6 × 2)	200,000
Carrying amount at end of Year 6	400,000
The asset is then sold for	250,000
Loss on sale	$150,000
If the asset had not been revalued:	
Carrying amount at end of Year 6	$200,000
Asset sold for	250,000
Gain on sale	$50,000
Total effect on profit over two year period:	
Increased depreciation expense Years 5 and 6	$100,000
Difference on sale	200,000
Total reduction of profit which equals the amount of the revaluation	$300,000

4. While the asset is held, the revaluation results in both higher total assets and higher shareholders' equity. The amount of these increases is equal to the valuation increment less any increased accumulated depreciation resulting from the revaluation.
5. While the asset is held, there will be changes in financial ratios: (a) the rate of return on total assets will be reduced because of the decrease in reported profits and the increase in the carrying amount of the asset; (b) the rate of return on shareholders' funds will be reduced as a result of the decrease in reported profits and the increase in shareholders' funds; (c) the debt/asset and debt/equity ratios will be reduced because of the increase in the carrying amount of the asset and the increase in shareholders' funds.

For a non-depreciable asset there will be no effect on reported profits while the asset is held. However, the other effects noted for depreciable assets will nevertheless be present.

In addition to these effects on the financial statements, there are also likely to be a number of actual costs or cash outflows associated with asset revaluation. These include expenses directly associated with obtaining a valuation, particularly when an independent valuer is used. There is also likely to be an increase in audit fees as auditors are likely to have more difficulty verifying subjective valuations compared to an historical cost-derived value. With a directors' valuation, the auditor may have to obtain evidence from an expert valuer to verify the reasonableness of the valuation. Where the company has obtained an independent valuation, the auditor may need to rely on the work of the valuer as an expert. In both cases, guidelines are set down in Statement of Auditing Practice AUP 22, *Using the Work of an Expert* (Australian Accounting Research Foundation, 1985). The skills, competence and objectivity of the valuer as well as the work performed are to be assessed. In these situations the auditor continues to be responsible for forming an opinion on the financial information (Statement of Auditing Standards AUS1, 1990, para. 20) and it can be argued that the level of inherent audit risk is increased both by the subjectivity involved and the need to rely on a third party.

THE REASONS WHY AUSTRALIAN FIRMS REVALUE ASSETS

Whittred and Chan (1992) claim that 'asset revaluations are a common feature of Australian accounting and reporting practice, with an average of over 23 per cent of firms revaluing each year between 1972 and 1985. Given the profit reductions associated with the practice, there must be powerful incentives to revalue assets.

We will consider six possible reasons for asset revaluation: (a) to provide a lower, more realistic measure of profit; (b) to provide more meaningful data on the balance sheet; (c) to create a reserve from which bonus shares can be issued; (d) to improve asset backing per share and to increase share prices; (e) to improve the debt/asset ratio; or (f) as a result of opportunistic behaviour by managers.[6]

A Lower, More Realistic Measure of Profit

It can be argued that historical cost becomes less meaningful or relevant as an asset gets older and that depreciation based upon historical cost becomes less and less an indicator of the current cost of using the assets. Revaluing assets and basing depreciation on the revalued amount goes some way towards matching current value expenses against current value revenues to report current value profits.

Chambers (1973, p. 56) suggested that one of the reasons companies revalue may be to correct 'apparently excessive earnings'. However, this argument appears inconsistent with recent behaviour and should be viewed with some scepticism. It is our belief that, in general, Australian firms are reluctant to adopt profit-reducing accounting practices, particularly when the reduction in profit does not lead to a reduction in the liability to pay income tax and the profits cannot be recovered in subsequent periods as part of a 'smoothing' process. Witness the recent controversy about AAS 18, *Accounting for Goodwill* (1984). It was generally agreed that the requirements of this standard were theoretically sound within the context of contemporary accounting, but were nevertheless unacceptable because they reduced profit for many firms. In this case, 'practical' considerations were judged to be more important than theoretical niceties. Given this reaction to AAS 18, it is hard to take seriously an argument that the business community is willing to accept lower profits from asset revaluations because it leads to more 'relevant' financial statements.

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[6] An alternative approach would be to adopt a contracting theory framework and classify possible reasons on the basis of the underlying incentive that might lead managers to portray a particular outcome. However, contracting theory with respect to revaluations is not well developed at this stage and we believe that such an approach would cloud some of the fundamental issues. We have therefore considered possible reasons based on the effect of revaluations from the viewpoint of the reporting entity. We have, however, concluded with a discussion of possible managerial motivation for revaluation based on opportunistic behaviour. These contracting cost incentives are explored in Brown, Izan and Loh (1992) and Whittred and Chan (1992).

It could, perhaps, be argued that the business community was willing to accept CCA in the 1970s because it believed that the proposed system would result in more realistic profit measurement. In the same way, the business community today accepts asset revaluations because they result in an improved measure of profit. It will be recalled, however, that others argued the real objective of the business sector in supporting CCA in the 1970s was not to reduce profits but to reduce cash flows to the government, to employees and to shareholders (see Clarke 1982). When it became clear that CCA would not achieve those objectives, business support for the proposed system evaporated. Support for CCA based upon arguments for better accounting masked the real reason, which was a desire to limit wealth transfers to other sectors of the community. Similarly, it seems likely that current support for asset revaluations based upon a desire for better accounting is a socially acceptable excuse or a cover for some other reason for the support.

More Meaningful Data on the Balance Sheet

Arguably, firms revalue in order to report 'more realistic' asset values on the balance sheet. Historical costs, particularly of long-life assets such as land and buildings, become increasingly less relevant with the passage of time. Revaluing assets puts 'value' on the balance sheet. In today's jargon, it gives 'representational faithfulness'. More traditionally, Chambers (1973, p. 55) described it as providing 'a truer and fairer view'.

Again, we can question this motive. If companies were concerned with representational faithfulness and they believed that current values were necessary in order to present a true and fair view, then they would revalue all of their non-current assets on a systematic and regular basis. This is not the case. Revaluation appears to be non-systematic, with many companies recording a variety of valuations spread over a number of years.[7] From a user's point of view, the usefulness of the information generated can be questioned.

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[7] For example, the 1988 Financial Statements of S.A. Brewing Holdings Ltd contain seven different valuations for land and buildings (1980, 1981, 1984, 1985, 1986, 1988 and cost) and three different valuations for plant and equpment (1979, 1981 and cost); CSR Limited's 1988 Financial Statements contain five valuations for land and buildings (1974, 1984, 1985, 1987 and cost) and six valuations for plant and equipment (1962, 1977, 1980, 1985, 1987 and cost); Amatil Limited's 1988 Financial Statements contain five valuations for land and buildings (1980, 1985, 1986, 1988 and cost) and four valuations for plant and equipment (1975, 1984, 1986 and cost).

A Reserve from which Bonus Shares Can Be Issued

The revaluation of non-current assets creates a reserve which can be used to make bonus share issues to shareholders. Theoretically, such issues add nothing to the value of the firm. They have, however, been welcomed by shareholders because they are seen to convey favourable information to the market. Dividends per share tend to be maintained on the larger share base and shareholders therefore assume that, by making a bonus issue, directors are signalling that the future prospects of the company are positive and it can afford to increase its dividend payout.[8]

Bonus share issues have also been used as a defence against takeover bids. However, Casey and Eddey (1986) point out that the takeover regulations in force since 1981 have reduced the scope for issuing bonus shares as a delaying tactic when a bid is made. It could be argued that bonus issues are made to deter possible bids rather than as a defence against an actual bid and the asset revaluation reserve creates a means to achieve this strategy.

In Australia, with the introduction of dividend imputation and capital gains tax legislation, bonus issues have become less attractive to shareholders. Since 1 July 1987, bonus share issues from any source other than the share premium reserve have been treated as dividends and taxed accordingly. They are also subject to capital gains tax when sold. We believe that these tax implications outweigh the advantages of bonus issues and that it can no longer be argued that the creation of a reserve is a plausible explanation for asset revaluations.

Improved Asset Backing and Increased Share Price

Another possible reason for business support for asset revaluation is that it allows increases in asset backing per share virtually at the discretion of directors. Possibly increases in asset backing will lead to increases in share prices, a reduction in the cost of capital and hence will discourage takeover attempts.

If the capital market is efficient, an asset revaluation should only have an impact on share prices if that revaluation tells the market something that it does not already know. The financial statements are not the only source of information available to the market and current values can be predicted from other sources. Many suggest (the authors included) that sophisticated users will not be fooled by anything as simple as an asset revaluation which causes no change in the entity's basic condition (see Brealey and Myers, 1988). With an efficient capital market, asset revaluations are unlikely to lead to share price increases.

On the other hand, if investors are naive and thus likely to be influenced by revaluation-induced increased asset backing, then they will also probably be influenced by the accompanying fall in profits and rate of return. Any increase in share price due to improved asset backing would be at least partly offset by decreases in the share prices due to deteriorating performance.

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[8] A distinction can be drawn between bonus issues and share splits. While the end result of both practices is very similar, it is only bonus issues that require the capitalization of a reserve. Interestingly, the research evidence suggests that, unlike bonus issues, share splits are not interpreted as a favourable signal to the market (see, e.g. Ball, Brown and Finn, 1977). While the reasons for this are unclear, it may indicate why managers appear to have had a preference for bonus issues rather than share splits.

Empirical studies on the effect of revaluations on share prices, although providing mixed results, do support our arguments. Sharpe and Walker (1975) concluded that revaluations influence share prices but their results were disputed by Brown and Finn (1980) because of a lack of adequate controls of other variables such as increases in profit, dividends and the announcement of bonus issues. Standish and Ung (1982), in a British study, found the apparent influence diminished once they attempted to control for these other variables. In a New Zealand study, Emanuel (1989, pp. 221, 224) found that 'any evidence supportive of the "information content of asset revaluations" argument is sparse' and that, once other variables were controlled, 'the less it appeared that one could attribute any price reaction to the asset revaluation'.

We conclude that, irrespective of capital market efficiency, asset revaluations are unlikely to have a significant effect on share prices.

Improved Debt/Asset Ratio

Asset revaluations, as they are practised in Australia, result in increased shareholders' equity for as long as the asset is held. This increase in reported equity may improve perceptions of the company by suggesting that leverage is less than it would otherwise be. This apparent reduced leverage may enhance borrowing capacity, thereby lowering the cost of capital. In general, most long-term borrowing comes from one of two sources — from institutional lenders such as banks and finance companies or from public debt issues. We will discuss these two types of debt separately.

Institutional lenders have the power to demand current valuations of assets before they lend, particularly if those assets are being offered as security for a loan. Amounts recorded in general-purpose accounting reports are not likely to be relevant. As far as this type of borrowing is concerned, it is unlikely that capacity to borrow will be enhanced by asset revaluations in the financial statements.

Public debt issues are governed by contracts such as trust deeds which contain restrictive covenants. Many trust deeds or indentures contain covenants which specify a maximum liability-to-asset ratio. In Australia, it appears that the typical trust deed from a public issue of debentures restricts total liabilities to 60 per cent of total tangible assets and secured liabilities to 40 per cent of total tangible assets (Stokes and Leong, 1988; Whittred and Zimmer, 1986). If these percentages are exceeded, then the trustee may conclude that the borrower has defaulted and demand rectification of the breach or repayment of the loan. As a general rule, the trustee will assess the borrower's compliance with the covenants by reference to the borrower's published balance sheet.

It has been argued that the ability to revalue assets provides an opportunity for directors to avoid breaching a debt/asset covenant. Asset revaluation increases the carrying amount of the assets and lowers the debt/asset ratio. Whittred and Chan (1992) argue that this means that firms are more likely to revalue when their level of leverage is increasing and their borrowing capacity is reduced. Their empirical evidence tends to support this view.

It is likely that trustees are aware of asset revaluations diluting the strength of restrictive covenants and that they modify the covenants accordingly. Whittred and

Chan (1992) note that, typically, the deeds define total tangible assets to exclude:

> any amount by which the book value of any tangible asset is written up subsequent to the annual balance date immediately preceding the date of the Deed, *except* where such writing up is made in accordance with and so that the book value does not exceed a valuation by an independent valuer approved by the Trustee.

In other words, lenders are well aware of asset revaluations and are prepared to allow them to reduce the reported debt/asset ratio provided that the valuation is acceptable to the trustee. It seems likely that restrictive covenants in trust deeds will be tighter in an environment where revaluations occur. In other words, the covenants assume that there will be revaluations of assets. In these circumstances, revaluations are forced upon the borrowers by trust deeds which are based upon the assumption that they will occur.

Opportunistic Behaviour by Managers

The preceding discussion of reasons for asset revaluation has been from the viewpoint of the reporting entity. It is also possible that managers may revalue assets because it is consistent with improving their personal well-being. This opportunistic behaviour would occur, for example, if management remuneration packages were directly related to the reported value of aggregate assets. It seems unlikely, however, that remuneration will be related only to asset amounts. Such a package would encourage managers to expand assets regardless of profitability and would not be in the interests of the reporting entity.

Empirical evidence suggests that management remuneration packages are usually related to performance measures such as reported earnings or rates of return (Emmanuel, Otley and Merchant, 1990, p.230, and Whittred and Zimmer, 1990, pp. 28–9). In these circumstances, opportunistic behaviour would be not to revalue assets, as this reduces both profits and rates of return on assets or equity. Remuneration packages may also include shares or share options which may encourage managers to attempt to inflate the price of shares. However, it was shown above that asset revaluations do not appear to have a significant effect on share prices. It is therefore unlikely that managers' remuneration packages will lead to asset revaluations as opportunistic behaviour.

It is also possible that managers may indulge their egos by expanding that part of the reporting entity over which they have control beyond the point where the owners' wealth is maximized (Morris, 1967, pp. 62–3). In this situation, opportunistic behaviour is related to power and prestige rather than to salary. While this type of opportunistic behaviour may occur, it is unlikely to be widespread because of the associated impact on profitability.

Managers may also revalue assets to avoid the personal stigma associated with a breach by their company of a covenant of a trust deed. The effect of this behaviour has been considered in the previous subsection.

In conclusion, while it is possible that asset revaluations may be the result of opportunistic behaviour in a few cases, it is unlikely to be a major reason for the practice.

It would appear, therefore, that the only plausible reason for the revaluation of assets with a subsequent fall in profits is to comply with the covenants of trust deeds. The need to revalue arises because revaluations are anticipated by the lenders.

IMPLICATIONS

Several implications emerge from this discussion:

1. The revaluation of assets is inconsistent with the accounting structure within which it occurs. It violates the traditional accounting principle of historical cost and objectivity. It is not allowed in the United States and Canada and it destroys the logical base of contemporary accounting.
2. There are significant costs associated with asset revaluations. Over the life of the asset, profits are reduced by the amount of the valuation increment. In addition, there are actual expenses incurred in obtaining a valuation and there is also likely to be an increase in audit fees.
3. There would appear to be few obvious benefits from revaluation. The creation of a reserve to enable a bonus share issue is less attractive due to recent changes in tax legislation. It is unlikely that an improvement in asset backing per share will raise share prices. It is also unlikely that an improvement in asset backing per share will raise share prices. It is also unlikely that a revaluation-induced lowering in the debt asset ratio will improve the company's borrowing capacity. Furthermore, covenants in trust deeds appear to allow for revaluations.

CONCLUSION

Asset revaluations cannot be justified on theoretical grounds as part of an historical cost accounting system. Under that system, assets that are held for use should be shown at cost because they are prepaid expenses. Revaluing them destroys the logic of the system and results in accounting reports based upon a hybrid capital maintenance concept. If, in the interest of 'representational faithfulness', it is believed that the market values of non-current assets should be disclosed, then this may be done by way of a note to the accounts. The logical basis of the accounting system would be unaffected. Alternatively, if it is believed that current values should be reported on the balance sheet, then the whole historical cost system should be abandoned and a new current value system should replace it.

On more pragmatic grounds, present Australian asset revaluation practices reduce reported profits, rates of return on assets and rates of return on equity. There appears to be no advantage to the reporting entity apart from aiding compliance with restrictive covenants of trust deeds. Even this is an illusory advantage as the trust deeds are framed in anticipation of asset revaluations.

For too long the practice of revaluation has been accepted uncritically as part of contemporary accounting. It is time to seriously reconsider this practice.

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Emerging Evidence of Early Indian Accounting

The paper examines the extant late-eighteenth-century accounting record books of Kantababu, a Bengali property owner and silk trader. These annual records, in part destroyed by white ants and other insects, do not make up a complete set for more than any two Bengali solar years. Yet from the available evidence it is possible to make a case that some elements of the accounting systems used by Kantababu and his clerks have similarities to medieval and later European methods and to eleventh-century methods used by Cairo merchants as evidenced by documents stored in the Genizah of the Old Cairo synagogue.

Key words: Accounting records; Bookkeeping; History.

INTRODUCTION

Comprehensive analyses of accounting systems used by European bookkeepers and accountants throughout the ages have been published in many languages. The scholarly collection assembled by Littleton and Yamey (1956) is a good example of the genre. In contrast, analyses of early Indian accounting systems have been speculative and/or superficial. Gladwin (1796) suggested that by 1790 the Persian mode of bookkeeping was used throughout India for both public and private accounting records. He did not indicate whether the Persian mode, which he suggested was introduced in 1583, or the Hindu method it replaced were double-entry. Hamilton (1798) opined, in a brief review of the history of bookkeeping, that Bengali traders, known as banians, used double-entry. Alexander Hamilton's younger brother Walter (Hamilton, 1820) stated that the system used by the Bengalis involved a day book and a kind of ledger, but it did not admit of a regular balance like the Italian method. Lall Nigam (1986) presented an analysis of a contemporary Indian accounting method that has its roots in the past. Lall Nigam drew on Hamilton (1798) for support and contended that the system used by Indian traders was double-entry and suggested that it was the precursor of the Italian method, having been transported by Indian traders to Italy. Unfortunately Lall Nigam did not present any evidence in the form of extant early records. Nobes (1987) dismissed Lall Nigam's case on the grounds that he did not present extant evidence, that Hamilton (1798) was not an expert and furthermore that it was unlikely he had seen any early accounting records.

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A convincing case for or against early Indian double-entry cannot be made in the absence of access to contemporary books of account such as cash books and ledgers. Fortunately, evidence of early Indian accounting methods is emerging. Gladwin (1796) in a rare book presents a set of Bengali revenue statements that feature a special script known today as Siyakat and a Persianized language that were used throughout the Ottoman Empire in the keeping of financial records. Siyakat is described as a kind of shorthand; it is difficult to read and was used throughout the Ottoman Empire in tax and trade registers until about 1880 (Reychman and Zajaczkowski, 1968). Gladwin (1796) introduces the reader to his work with an Advertisement or preface that provides a short history of the development of accounting in India. As the work is not available in most major libraries it is appropriate to reproduce the Advertisement in full:

> When the Mohammedan Princes conquered Hindostan, and deprived the Rajahs of sovereign sway, by appointing Omrahs over every province, for the administration of justice, and settlement of revenues, although these new governors were totally ignorant of the Hindy language, and at the same time had in their service many natives of Iran and Turan well versed in Persian arithmetic, still they could not so far overcome national prejudice, as to be able to introduce the Persian mode of book-keeping, but were constrained to continue in office the Hindy scribes who kept their registers and accounts as formerly.
>
> No attempt was made to alter this course under the Mohammedan Princes for somewhat more than four hundred years, till in the reign of Akber, the celebrated Sheik Fizy, brother to the great Abulfazel, having translated from the Hindy into Persian a book entitled *Lilawotee*, which is a treatise on Hindy arithmetic, the Emperor expressed so much satisfaction on the occasion, that several other learned men of his court were ambitious of recommending themselves by the same pursuit. Amongst them were Abi Rihan Meshedy, Khoyeh Shah Munfoor Shirazy, Khojeh Atha Beg Cazviny, and Khojeh Nizameddeen Ahmed Bukhshy (author of the Tebecat Akbery). These set to work and translated the Hindy records and accounts into Persian, with a view of bringing the language into general use: their plan, however, was not then adopted. But afterwards in the 27th year of the same reign, or A.H. 991, the Grand Vizier, Rajah Tudermull, carried the design into execution. He directed that the Hindy accounts and registers should be discontinued, and the Persian mode substituted in its stead throughout the empire. The cumbersome Hindy Poothies, or books, were now disused, and the public accounts and registers preserved on distinct *Fêrds*, or leaves of paper. (This regulation, however, applied only to public records, and to transactions immediately with government in the revenue and other departments; in private concerns every one was left at full liberty to act as he pleased; but in the course of time the Persian mode has obtained so generally throughout Hindostan, that Siyak is now become an essential qualification for the merchant, as well as for the financier.)
>
> The Mohammedans at that time had but little skill in Persian arithmetic and book-keeping, but their deficiency was soon made up by the Hindoos, who applied themselves with great assiduity to the study of Siyak, and are to this day the best accountants in the empire. At first such accountants were held in high estimation, but as their number increased very rapidly, individuals, of course soon lost their consequence; however, an able *Mohurrir* is always sure to meet with good employment in Hindostan, as much time and labour are required for the attainment of a perfect knowledge of the various details of revenue business. They are mostly of the Koyt tribe, but about Penjab and Multan some Kheyteries also are very skilful in this branch of learning.
>
> The Siyak characters are all contractions of Arabic words, but as this mode was immediately adopted from Persia, it has obtained the name of that country; in like manner as we call our figures Arabian, on account of our having received them from that nation, but in fact they are of Hindoo origin. (Gladwin, 1796, pp. i–ii)

Gladwin (1796) was a contemporary observer and it is not known if any of the documents that he reproduced are available today. Furthermore, contemporary evidence suggests that Siyak is no longer used either in Turkey or in India (Lall Nigam, 1986).

Nandy (1978, 1981, 1986) showed that Bengali accounting records from the second half of the eighteenth century are extant. It is possible that at other places in India and elsewhere there are more sets of eighteenth century or earlier Indian business records awaiting rediscovery and analysis. Likely sources are records held by descendants of Bombay, Madras and Calcutta traders who continue businesses that evolved from those operated by their eighteenth-century forebears. We know of two other Calcutta families who hold such records, but access as yet is impossible due to the records being common property.

Cossimbazar Raj Records

Sometime in the late 1960s Somendra Chandra Nandy discovered an immense treasure of documents, deeds and books stored in neglected boxes and sealed trunks in his ancestral home at Cossimbazar, about 200 kilometres north of Calcutta. These records enabled Nandy (1978, 1981, 1986) to compile a socioeconomic history of the Cossimbazar Raj family from the acquisition of its first property in 1742 until the mid-twentieth century.

The earliest extant book of accounts relating to the family activities is a ledger for the Bengali year 1176 (1769–70) which records a comprehensive picture of the household expenditure of a property owner and silk trader, Kantababu. Later, to keep account of his various business and personal activities, several cash books and ledgers were required by Kantababu. Nandy (1978, 1981) provides a complete list of the years for which there are extant records, together with details of the types of financial transactions recorded and ledger accounts maintained. As it was beyond the scope of his socioeconomic study, Nandy (1978, 1981, 1986) did not consider the accounting techniques employed by eighteenth-century Bengali accountants. In particular, Nandy did not analyse whether or not the records were double-entry, nor did he compare and contrast the methods used by early Indians and those used in the West.

Krisna Kanta Nandy

Krisna Kanta Nandy (*c.*1720–94), commonly known as Kantababu or Cantoo Baboo as the English called him, was a fourth-generation descendant of a family which came from Burdwan to settle in Cossimbazar near Murshidabad, which was then the capital of Bengal. The family were traders in silk. Kantababu assumed the leadership of the business on the demise of his father in 1754. He soon expanded his business to silk cloth, silk piece goods and various types of cotton cloth and goods. He also produced filature silk. He became a manufacturer, trader and wholesale supplier of salt, foodgrains and various other commodities. His areas of business extended from Bengal to Bihar, Orissa and upper Assam. His silk cloths and silk piece goods were exported to Europe, America and Africa by the English East India Company.

In Bengal the East India Company started revenue farming in 1766. Kantababu was an early revenue farmer for the company. Later, in the name of his son Maharaja Lokenath, he was one of the first Permanent Settlement Zemindars. He was the banian to Warren Hastings from 1754 to 1763 and from 1772 to 1785. In the later period Hastings was the governor-general of Fort William in Bengal. He travelled with Hastings over much of India and was held in great trust.

Kantababu amassed a considerable amount of property and wealth during his life. His family, which came to be known as the Cossimbazar Raj family, gained prestige and honour by their philanthropic and charitable disposition.

Physical Form of Account Books

Each of Kantababu's account books is a bound set of handmade white paper sheets. Nandy (1981, p. x) described the processes for making the paper and the ivory black ink used by the bookkeepers. Some of the books measure seventeen centimetres across by fifty centimetres down; other volumes are twenty centimetres by fifty-five. The sheets or folios are held at the top by three stitches between oversize, soft, white or red cloth paper covers. The end cover of each book is ten to fifteen centimetres longer than the front. This enables the page ends to be covered when a book is folded over and stored. Unfortunately, this method of storage is not compact and gaps at the centre of the fold provide easy access for white ants and other insects. As a consequence the leading pages of a number of Kantababu's books of account are in very poor condition. The stitching across a book is about three centimetres from the top. Thus when a book is opened the writer has an area of about eighty to ninety centimetres long by seventeen to twenty centimetres wide on which to record transactions. Yamey (1989) exhibits a 1790 painting by Thomas Hickey of a banian standing before an English merchant and reading from such an account book. The oversize end cover and the strength of the binding are clearly evident. Given their length and weight, they might be deemed to be cumbersome (Gladwin, 1796, p. ii). Other similar books, partly folded, are on the floor. Today, in Calcutta, it is possible to purchase plain paper notebooks which are constructed in a similar manner.

Notation

The Cossimbazar records were written in Bengali, using both the Bengali alphabet and number symbols. The Bengali number symbols are not identical to the Hindu–Arabic set adopted in the West. For example, the present Western symbol for eight denotes in Bengali a value of four (Gladwin, 1796, p. ii). The Bengali language is enriched by Persian business and administration terms. These words and their abbreviations are used throughout the Cossimbazar records. The use of Bengali in Kantababu's books is of interest because Gladwin (1796) contended that use of Siyak characters was an essential qualification for merchants and financiers. In contrast, Lall Nigam (1986) suggested that Indian languages were widely used, the most common being Muria, which is also known as Sarafi or Mahajani.

In Kantababu's ledgers consecutive pagination is recorded top centre of the verso side of each sheet. The page numbers serve as quasi ledger account numbers and an index or chart of accounts is made up on the first page of each ledger. In contrast, the pages of Kantababu's cash books are not numbered. The lack of pagination is not a hindrance to access, however, because entries are in chronological order.

Dates were recorded using the Bengali solar calendar. The Bengali year comprises twelve months and, in general, account books were opened on the first day of the year — the first of Baisakh — which corresponds to a day in the second full week of April. Gladwin (1796, p. 16) states that in 1790 'the Bengal vulgar year commenced on the 11th of April'. In some ledger accounts, especially those of English traders with whom Kantababu did business, the equivalent Christian date is also shown.

The unit of account throughout Kantababu's records is the sicca rupee. Prior to 1772 the value of the sicca rupee decreased each year after it was minted — an unusual system which yielded revenue to the government (Gladwin, 1796). Transactions were conducted using various coinage and exchange rates were used to determine values expressed in sicca rupees. Gladwin (1796) shows revenue statements in which some amounts were received in sicca rupees and other amounts were received in French arcots. The gold mohur was an important unit of exchange and after 1772 it had a stable value of 16 sicca rupees. The sicca rupee was subdivided into annas (16 to a rupee); gondas (20 to an anna); and karas (4 to a gonda). In Kantababu's accounts, rupees and gondas were recorded using the regular Bengali 0–9 number symbols. In contrast, the intermediate annas and karas were recorded using a completely different notation based on four symbols. Gladwin (1796, p. 4) observed that in Siyak acounts 'Annas are distinguished from Gundahs by the stroke being placed to the left of the former, and on the right of the latter'.

It seems reasonable to conclude that these Eastern methods were designed to prevent errors and fraud. They are akin to the Roman practice of using a j rather than an i for the last symbol in a series, for example, viiij rather than viiii or the abbreviation ix. Canada Post and postal authorities in Brazil and The Netherlands provide contemporary examples of a similar practice. Their franking machines record dates using a mixed Hindu–Arabic and Roman form. The Roman numerals are used in the centre position to denote the month.

Invocation to a Deity

Reychman and Zajaczkowski (1968) detail Ottoman diplomatic protocols. They show the importance of invocations which as a rule headed each document. Ottoman documents were often headed 'He'. In contrast, documents prepared by Christians might bear the sign of the cross. Nandy (1981, p. 315) showed that Bengali bookkeepers started each day with a brief salutation to a god. On special days, such as the last day of the annual worship of the goddess generally known as the Day of Victory, accounts might be re-dedicated to the deity. This was done in one cash book by an impression on the day's page of five small coins dipped in vermilion. It is of interest to note that often the first entry for a special day was a contra receipt and expenditure of 101 sicca rupees, made by the proprietor and to be spent for the deity. This amount was entered only in the cash book. That is, no concomitant entries were made in the ledger.

The dedication of accounts to a god has parallels elsewhere. Goitein (1974, p. 280) showed that the eleventh-century accounting records found in the Genizah of the Old Cairo synagogue featured a salutation to God, for example, 'In the name of the great God' and 'May God bestow on us its blessings'. This custom ensured that the record would not be destroyed, at least not by a Jew. A similar dedication is found in the early fifteenth-century accounts of the Worshipful Company of Grocers of the City of London: an account is headed 'En le nom de Dieu...' (Brown, 1968, p. 57). Also, Ramsey (1956, plate vi) features a religious dedication in the journal of Sir Thomas Gresham (1519–79), who was a merchant, founder of the Royal Exchange and financial adviser to Queen Elizabeth. Gresham's dedication 'In the name of God' is similar to those selected by Goitein (1974) and Brown (1968). Ramsey (1956) points out that the Antwerp merchant Ympyn whose treatise was translated into English in 1547 advised readers to begin an inventory with the sign of the cross which would differentiate the accounts from those kept by the Turks and the Jews. In The Netherlands in 1588 the words 'God be all praise, honour and glory' were recommended by Nicolaus Petri (Brown, 1968, p. 134). It seems that this predilection to display one's piety was adopted by Christians, Jews, Muslims and Hindus. In the Christian world it exasperated one famous clerk at India House, Charles Lamb (1775–1834). In a well known essay he bids farewell to ledgers and 'their pious invocations of the deity' (Brown, 1968, p. 159).

Bilateral Form

Two bilateral forms are frequently used by accounting system designers. The earlier form lists entries one by one and inflows are distinguished from outflows by the use of a separate column in which the monetary amounts are recorded. The later form distinguishes not only the monetary amounts but also the date, narrations and other details by placing them together on one or other side of a real or imaginary centre line. This form is widely known as the T account form. A modification or possible precursor of this form is the use of separate pages for inflows and outflows.

Kantababu's cash books and ledgers are in bilateral or T account form, cash receipts being shown on the left and cash payments on the right. The sides of the T were invariably headed *Jumma* and *Kharch*. These terms are translated as Income and Expenditure. In each column the date is written on the left, with the transaction details juxtaposed. The amount is written on the right. In the cash books on the right of each entry, the ledger page number, to which the amount is posted, is recorded at a forty-five degree angle. This practice ensured that the ledger account page numbers were not confused with monetary amounts.

The regular T form was often modified by the use of an inner column to the left of a main money column. On some cash book and ledger pages the inner column was used to compute a sub-total which was carried to the main money column. For example, in the 1784–5 cash book, gross cash receipts from property collections are recorded at the head of the inner column, various expenses are then shown and the net amount of cash handed over to the cashier is recorded in the main column.

Frequently, for recurrent expenses, the inner column of a ledger account was used after the main column on the right had been filled from top to bottom. For ledger accounts where it was obvious that only cash receipts or cash payments were to be recorded, the entries sometimes spill over onto the other side of the T. The bookkeeper indicated spill-overs by leaving a space between the page top and the first errant entry and/or by re-heading the column. For example, the 1784–5 account books feature a miscellaneous revenue account which is on page 28 of the ledger. It seems that miscellaneous revenue was received on about 170 days of the year and in order to squeeze them onto the double-page space available, the bookkeeper kept the details recorded to a minimum; he recorded only date and amount and used four columns, two on each side of the T.

In some cases two expense accounts occupy the same page, one in the Jumma column, the other in the Kharch. The bookkeepers did not adhere to hard and fast rules. They used the available space, yet they always clearly indicated when the regular layout was not followed.

De Ste Croix (1956) found that evidence of the bilateral form being used by Greeks and Romans is absent except for one outstanding example. This unique papyrus roll dated for the years 191–2 from Upper Egypt records cash receipts and payments of an estate manager in the Fayyūm. It is of interest to note that this papyrus is attributed to the Roman period, that is, prior to the invasion of Egypt by the Arabs in the seventh century. Similarly, de Roover (1956) noted that the bilateral form was not universally used in medieval Italian accounts.

Goitein (1974) also found evidence of a bilateral form of accounts being used in Egypt. He provides a description and translation of numerous eleventh-century accounts found north of the Fayyūm in the Old Cairo Genizah. A statement by Goitein (1974, p. 273) 'that the form of some of the accounts goes back to antiquity while others have a form that is used today' indicates that he realized the significance of the form used by Jewish traders. However, he suggested that a discussion is better left to an edition of the originals. This edition was produced by one of his students. Gil (1976) shows copies of accounts that reproduce the original Hebrew and Arabic script, together with English translations. Goitein (1974) and Gil (1976) indicate that the Genizah records are written on sheets, sometimes folded into four pages, and that a number have a columnar form. Gil (1976, p. 471) shows a document where the recto contains the lists of revenue from rent and the verso shows expenditure made over the same period. Somewhat astounding is Goitein's (1974) translation that heads some columns debit and some credit. In an earlier work Goitein (1971, p. 116) indicates a lack of understanding of accounting concepts by mentioning a 'balance sheet' that shows revenue on the right and expenditure on the left. He justifies this presentation by the medieval merchants on the grounds that Arabic and Hebrew scripts run from right to left. Goitein (1974, p. 279) also suggests that an Arabic expression for 'closing the account' might be the origin of the phrase used in Europe today.

Reproductions of original Siyak statements of revenues and expenditure featured by Gladwin (1796) also exhibit a columnar if not a bilateral form. In a glossary Gladwin explains the meaning of the Hindi word *kherchah*. He states that it is an account current of each ryot, specifying on the right side of the page the particulars of his jumma (i.e., the amount of tax payable) and on the left the sums he has paid with the dates of payment.

Cash Book and Ledger 1191 (1784–5)

In this section we consider in detail the method used by Kantababu's bookkeepers in the Bengali year 1191 (1794–5). This is the earliest year for which both a cash book and ledger are extant. Their existence enables a comprehensive analysis of the method used by Kantababu's Bengali bookkeepers. The 1191 cash book and ledger record cash receipts and payments related to Kantababu's considerable property holdings. Being a revenue farmer Kantababu was required by the East India Company to make payments to them. This method of taxation is an ancient Indian activity. The Muslim sultan of Delhi who reigned from 1296 to 1316 initiated a system of taxation based on the measurement of land holdings (*Encyclopaedia Britannica*, 1988, Vol. 21, p. 53). It seems that other thirteenth-century Turkish rulers were less scientific when they extracted tributes from land-holders.

The account books of Kantababu that record the property-based transactions are deemed particularly useful to the analysis of early Indian accounting methods because they record an indigenous activity that has its roots in antiquity. In contrast, other account books of Kantababu record trading transactions with and on behalf of Europeans and there is some suggestion that the methods used in these books might have been influenced by those with whom Kantababu conducted business.

The 1191 cash book and ledger were used to account for an activity which in terms of bookkeeping is relatively simple. As a consequence it is not difficult to understand and to analyse the method used to keep the books. Manufacturing and trading activities are more complex than revenue farming and the analysis of Kantababu's accounting records for these is more difficult, especially as the extant records are incomplete. Nevertheless, we are confident that the method used to account for revenue farming was the base on which accounting for more complex activities was built.

The cash book and ledger of 1191 are in reasonably good condition. White ants have damaged pages, but the burnt-ivory ink has not faded and most amounts can be read from either the main column or the sub-total inner column. In his summary of the contents of the 1191 cash book and ledger, Nandy (1981, p. 229) showed that the ledger was kept to match the cash received and expended on account of thirty-two or more properties that Kantababu owned.

For the year 1191 the ledger is subsidiary to the cash book which is an all-in-one cash journal and control account. The ledger is subsidiary in the sense that it does not contain any entries that are not recorded in the cash book. Furthermore, every entry in the subsidiary ledger is recorded on the same side, Jumma or Kharch, as it is in the cash book/account. The ledger accounts for 1191 do not have opening balances and there is no evidence that balances were struck or were transferred to a summary account at the end of the year.

The 1191 accounting books of Kantababu record only cash transactions. The subsidiary ledger contains no permanent accounts. There are no asset, liability or equity accounts. There is no concept of debits and credits or anything akin. The entries record cash receipts and cash payments. The cash book entries are in chronological order; daily totals of net receipts and expenditure are footed. Only at the end of the first day of the year is there evidence that an attempt was made to reconcile the cash on hand. In contrast, the cash book for 1194 (1787–8) shows daily cash reconciliations. The function of the ledger was to allocate net cash receipts and cash payments to particular land holdings. But many cash expenses went unrecorded in the ledger. They were netted out in the cash book. The cash book shows cash receipts from each farm at the top of an inner column. Following and under this amount cash expenses of the collector(s) and amounts paid by the collector(s) on behalf of the revenue farmer are listed. A total of the expenses is shown and the amount of net receipts is recorded in the main column. These cash expenses, in contrast to those paid by Kantababu's cashier which are recorded on the right-hand side, were not posted to the ledger.

CONCLUSION

Because of their bilateral form and the associated concepts of Jumma and Kharch, Kantababu's books of account to an untrained eye, such as Hamilton (1798), might appear to have been kept following the double-entry method. But as de Ste Croix (1956) pointed out, in his examination of Greek and Roman accounting records, the use of a bilateral form does not necessarily imply the use of double-entry.

Our examination of Kantababu's account books for 1191 (1784–5) show that two entries were made for every transaction. Soon after a transaction occurred the first entry was made in the daily cash book. At a later date the second entry was posted in the ledger from the details recorded in the cash book. Each entry in the ledger is posted on the same side of the T as it is recorded in the cash book. This early Indian method was developed to control cash and to maintain a record of cash receipts and payments that could be used as evidence should a taxpayer, collector or ruler instigate an enquiry. Yet the existence of two entries for each transaction does not imply double-entry.

For double-entry to exist at least two opposing algebraic terms, represented by accounts, are required. That is, the accounts must include at least one asset and one liability or proprietorship account. In Kantababu's books, only one algebraic term of account exists — that is, a cash account. All the accounts in Kantababu's 1191 (1784–5) ledger are segments of the cash account.

If Kantababu's account books are representative of the early bookkeeping method used throughout India to account for cash receipts and payments, then we conclude that double-entry was not developed or used in India prior to the Raj. The extant evidence shows that the Indians used a bilateral form. Whether Indians adopted this form earlier than those in Egypt or Europe remains an open question which will only be closed by the production of physical evidence.

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JOSEPH K. CHEUNG AND MANDY LI

Income Tax Effects on Asset Valuation and Managerial Analysis

Under an income tax structure that treats profits and losses unequally, the tax function is non-linear. This note examines how this non-linearity affects asset valuation and related managerial analyses.

Key words: Management analysis; Taxation; Valuation.

The income tax effect on asset valuation and managerial analysis has not been given consistent treatment in the literature. Most frequently, such an effect is assumed away.[1] When the tax effect is taken into consideration, it is typically assumed to be based on an exogenous tax rate.[2] The only reasonable way to reconcile these vastly different approaches is to assume that every firm is in a certain tax-paying position and that corporate income taxation is strictly proportional to income. Under such assumptions, the qualitative results of most financial analyis will be invariant between the no-tax and the proportional-tax treatments, and thus the two approaches are commutable.

However, neither the assumption that all firms are in a certain tax-paying position nor the assumption that corporate income taxation is strictly proportional is supported by empirical evidence. On the contrary, it has been documented that, because of the lack of sustained profits, not every firm is in a tax-paying position. In addition, it is almost universally true that, as a matter of public policy, profits are taxed when earned but losses are not directly subsidized at the same rate profits are taxed. Although most tax systems allow losses to be carried backward and/or forward, these are short of subsidizing losses at the statutory rate, since such provisions allow only nominal, as opposed to real, losses to be deducted against income and do not allow carryovers to accumulate interest.

Based on these observations, this note addresses how income taxation affects asset valuation and related managerial analyses. It first reviews the notion of tax asymmetry, as a result of which the tax liability is a non-linear function. It then

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[1] Bierman's (1971) analysis of asset valuation under inflation, the Cook and Holzman (1976) study of income theory, and the Livingstone and Salamon (1970) investigation of rates of return are a few of the examples that make such an assumption about the tax effect.

[2] Examples are Beechy (1969) on leasing, Sunder (1976) and Halperin (1979) on inventory methods, and Nikolai and Elam (1979) on depreciation tax shields.

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shows that, as a consequence of this non-linearity, the marginal tax effect of an asset decision is endogenous to the decision, which contrasts with the traditional assumption that the marginal tax effect is based on an exogenous tax rate.[3] Finally, it addresses several impacts of this endogeneity on managerial analysis.

THE FIRM'S TAX LIABILITY UNDER TAX ASYMMETRY

It has long been recognized (Domar and Musgrave, 1944) that income tax systems are asymmetrical to profits and losses, in that profits are taxed when earned while losses are not directly subsidized when incurred. This asymmetry is deliberately created by public policy because full subsidy of business losses by the government can potentially induce wasteful activities by encouraging marginal firms to stay in business and precipitate opportunistic behaviours such as fraudulent deductions and the like (Auerbach, 1983). In a survey of modern income tax systems, accordingly, Barlev and Levy (1975) found that such asymmetry remains the dominant structure. Although most tax sytems do grant a variety of reliefs from the adverse effects of the asymmetry, such as allowing losses to be carried backward and/or forward over time and allowing markets to exist for transferring unused losses across firms,[4] such reliefs are far from granting full subsidies for tax losses for the reasons that: (a) only nominal, as opposed to real, losses are carried forward: (b) loss carryforwards do not earn interest; (c) loss carryforwards can expire unused; and (d) loss-transfers between firms entail transaction costs. In short, it is virtually universal that income tax structures are asymmetrical to profits and losses.

This asymmetry in the tax structure alone, however, will not necessarily lead to distortive managerial decisions if all firms are certain to pay tax, because a firm with sustained profits will have a marginal tax rate equal to the statutory tax rate. However, recent research shows that, at least in the United States (Cordes and Sheffrin, 1983; Stout, 1989) and the United Kingdom (Franks and Hodges, 1987), a substantial proportion of business firms are not certain to pay tax. It is fair to conclude, therefore, that the tax asymmetry is a non-trivial binding constraint on the firm's decisions.

Because of this asymmetry in the tax structure, the government's income tax claim on the firm is analogous to a Black–Scholes (1973) type call option. In the case of a call option, the holder collects the difference between the realized stock price and the exercise price if the stock price exceeds the exercise price at the maturity date of the option, but the holder is not assessed to the extent of the shortfall if the stock price falls short of the exercise price. Likewise, the government taxes a percentage of the difference between the firm's revenues and the tax shields when the firm has a net profit, but does not subsidize the firm directly for its net losses. The appeal of the call option analogy is that it allows a host of factors affecting the firm's tax liability to be reduced to five variables: current value of the firm's pre-tax cash flows, volatility of the pre-tax cash flows, value of the tax shields, time to the next tax payment, and the risk-free rate (Ball and Bowers, 1983, pp. 4–5).

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[3] The progressive nature of the tax effect referred to here is due to the tax asymmetry in regard to profits and losses. Under such an asymmetry, the marginal tax effect is progressive even though the statutory rate may be constant. A progressive structure of statutory rates simply exacerbates the effects of the tax asymmetry.

[4] Such transactions include the use of lease financing, mergers and the like. Cooper and Franks (1983) discuss some of these tax-loss transfer arrangements.

Based on the standard results for call options, the tax function can be characterized by a number of interesting properties. Most crucial among them are: (a) it is an increasing function of the volatility of the pre-tax cash flows, and (b) it is a convex function of both the pre-tax cash flows and the tax shields. The intuition behind property (a) is that a wider distribution of the firm's earnings can only increase the upside potential of the tax claim since it is bounded from below by zero. Property (b) implies that net-of-tax values are non-additive, which makes the tax asymmetry a relevant concern for asset valuation and related managerial analyses, as will be shown below.

ASSET VALUATION UNDER ASYMMETRIC TAXATION

Let I be the firm's investment at time 0, which will produce a pre-tax cash flow at time 1. The net present value (NPV) of such an investment is given by

$$\text{NPV} = V(I) - G(I) \tag{1}$$

where V is the current (time 0) value of the pre-tax cash flow and G is the current value of the tax liability. If the firm invests so as to maximize NPV, it will invest up to the point where the marginal NPV is zero. Thus, the optimal level of investment, I^*, will satisfy the following first-order condition:

$$V' = 1 + G' \tag{2}$$

where V' and G' are the partial derivatives of V and G with respect to I. If the firm follows this decision rule, the asset's NPV will be

$$\text{NPV} = \int_0^{I^*} (V' - 1 - G')dI \tag{3}$$

Under the typical assumption in the asset-valuation literature, G' in (3) is constant and exogenous, so that all firms will find the asset to have the same NPV. However, if the tax function is non-linear, G' is endogenous and the asset's NPV is firm-specific. The marginal tax effect G' is endogenous because V and I, the decision variables, enter into the valuation of G, as discussed in the previous section. To the extent that G is different from firm to firm, moreover, so are G' and I^*. Based on (3), therefore, an asset's NPV will be firm-specific.

The following numerical example illustrates the endogeneity of the marginal tax rate and how it affects an asset's NPV. This example progresses from the case of zero tax shield to the case of two tax shields. In all three cases, the asset under

TABLE 1

SUMMARY OF NUMERICAL EXAMPLE

Assumptions:
Asset's pre-tax value = \$1,600
Depreciation tax shield (where applicable) = \$1,000
Maturity value of debt (where applicable) = \$1,200
Interest tax shield (where applicable) = \$180
Statutory tax rate = 40%
Standard deviation of asset's pre-tax value = 30%
Risk-free rate = 10%

Cases	Value of tax shields (\$)	Value of tax liability via Black–Scholes formula (\$)	NPV of asset (\$)
1 Asset generates no tax shields	—	640	960
2 Asset generates depreciation tax shield alone	362	278	1,322
3 Asset generates both depreciation and debt tax shields	422	218	1,382

consideration has a stochastic pre-tax value of \$1,600, with a standard deviation of 30 per cent. The statutory tax rate is 40 per cent, and the risk-free rate is 10 per cent. If a depreciation tax shield is available, it is equal to \$1,000, and if an interest tax shield is available, it is equal to \$180. Table 1 summarizes these assumptions and the related valuations using the Black–Scholes formula for the tax liability, as Ball and Bowers (1983, p. 6) have shown.

Under the assumption that the asset produces neither a depreciation nor an interest tax shield, the present value of the asset's tax liability is 40 per cent of \$1,600, which leaves \$960 as the asset's NPV. This is Case 1 in Table 1. In this case, the asset's marginal tax rate is equal to the statutory rate of 40 per cent because the tax asymmetry is not a binding constraint. Next, suppose the asset produces a depreciation tax shield equal to \$1,000. The results are given as Case 2 in Table 1. In this case, the tax liability valued via the Black–Scholes formula is \$278, which leaves the asset's NPV as \$1,322. The tax liability drops from \$640 in Case 1 to \$278 in Case 2 because the depreciation tax shield is worth \$362. But the marginal tax rate applicable to this tax shield is 36.2 per cent, rather than the statutory rate of 40 per cent. This shows that the marginal rate is endogenously determined when the tax function changes. Finally, in Case 3 both the \$1,000 depreciation tax shield and a \$180 interest tax shield are assumed available, the latter due to the introduction of debt financing with a maturity value of \$1,200. This results in a tax liability of $218, giving an NPV of $1,382 for the asset.[5] But the marginal tax rate applicable to this interest tax shield is 33.3 per cent, as compared to 36.2 per cent for the depreciation tax shield. Thus, Case 3 not only further illustrates the endogeneity of the marginal tax rate, but also demonstrates how the two tax shields compete for deductibility under the tax asymmetry constraint.

In sum, this section shows that the marginal tax effect in an asset decision is endogenous to the decision because acquiring the asset alters the shape of the tax function for the entire firm by increasing the firm's pre-tax cash flows and tax shields. Further implications of this result for managerial analysis are addressed below.

IMPLICATIONS FOR MANAGERIAL ANALYSIS

The central result of the previous section has a host of implications from both a public policy and a managerial standpoint. From a public policy standpoint, for instance, economists have long been interested in the effect of the tax asymmetry on the private sector's incentive to undertake risk, since the tax structure tends to penalize volatilities in the pre-tax cash flow.[6] Other public policy issues caused by the tax asymmetry include its effects on resource allocations such as rate-of-return regulations in a variety of industries (Doherty and Garven, 1986). In short, income taxation is pervasive and taking the tax asymmetry into account can enrich policy analysis. But the most immediate consequences of the tax asymmetry concern managerial decisions. The following discusses some of these consequences.

Tax Rate Assumptions in Financial Analysis

Given the tax asymmetry, it would not be appropriate to assume a proportional tax in financial analysis, as traditional practice typically does. The call option perspective helps shed some light on the firm's taxpaying status. When the pre-tax cash flow is large compared with the tax shield, the tax asymmetry is irrelevant. This is because the tax liability is a *deep-in-the-money* call option. The marginal tax rate in such a case is approximately the statutory rate. Similarly, the tax asymmetry is also irrelevant for firms with sustained losses. For these firms, the tax liability is a call option that is *deeply out-of-the-money.* Such firms would make decisions on a pre-tax basis. But for those firms that are in between, that is, whose tax liability is like a *near-the-money* call option, the tax asymmetry is a relevant constraint, as *near-the-money* options are the most valuable. Recent research indicates that a large number of firms are in a non-taxpaying position, which suggests that the tax asymmetry constraint cannot be ignored in financial analysis. In practical terms, this means that the tax effects in financial analysis need to be taken into account more carefully, such as avoiding simplistic application of the statutory rate.

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[5] This asset value should be equal to the sum of the market value of the firm's debt and equity claims. Cheung (1989, pp. 628–31) shows how such debt and equity claims can be priced precisely using the option formula. Specifically, the firm's equity can be priced as a call option on the firm's asset, with an exercise price equal to the payments for taxes and to the debtholders. After pricing the equity, the debt can be priced as the difference between the value of the asset and the value of the equity. Applying this pricing method to the present case would result in a value of $187 and $1,195, respectively for the firm's equity and debt.

[6] Such work ranges from Domar and Musgrave (1944) to the more contemporary work of Ball and Bowers (1983), Auerbach (1986), Mayer (1986) and Majd and Myers (1987).

Asset Diversification

Under the tax asymmetry, tax effects associated with managerial decisions are not additive. Consequently, managerial decisions that are otherwise independent may become interrelated via income taxation. One of the managerial principles affected is the irrelevance of asset diversification. Portfolio theory states that assets are priced on the basis of their systematic risks, because specific risks are diversifiable. More precisely, consider two cash flow distributions f_1 and f_2, whose systematic risks are the same, but f_2 is a mean-preserving spread of f_1. Under the capital asset pricing model (CAPM) and given a proportional tax, the two cash flows have identical net-of-tax values because the fact that f_2 has a wider dispersion affects neither its market value nor the associated income tax liability. Thus, it is a well received managerial principle that asset diversification will not enhance the firm's value (Ball and Brown, 1969, pp. 313–14).

Under the tax asymmetry, however, asset diversification can enhance the value of the firm. The reason is that such diversification reduces the total risk of the firm's pre-tax cash flows, thus lowering the firm's tax liability. Using the call option analogy for the firm's tax liability, diversification reduces the tax liability because it is an increasing function of the volatility. Several additional results emerge from this finding. First, contrary to the insights from CAPM, an asset's total risk matters, particularly if it is the only asset of the firm. Second, assets cannot be evaluated independently of one another. For instance, although an asset may be an undesirable investment when considered alone, it may nonetheless produce cash flows that are so negatively correlated with the firm's other assets that it can be justified on a net-of-tax basis. Third, conglomerate mergers that have no synergistic effects can nonetheless increase a firm's value to the extent that the merger amounts to an asset diversification. Finally, hedging transactions that reduce the risk of the firm's pre-tax cash flow can be justified from a tax standpoint if they sufficiently reduce the volatility of the pre-tax cash flow to make the tax liability less valuable.[7]

Interaction Between Assets

There are two well known doctrines in capital budgeting: independence between asset decisions and independence between investment and financing decisions. Under the tax asymmetry, these independences will break down. When the tax function is non-linear, the value of a proposed asset depends partly on whether its cash flows will vary in tandem with the cash flows from the firm's existing assets. So there is an interdependence between assets which cannot be ignored in capital budgeting decisions.

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[7] There are other motivations behind the firm's hedging transactions. See Smith and Stulz (1985) for a discussion of some of the competing hypotheses.

This point can be made more precisely. Let the tax on the existing assets be G(V, K), where G is a Black–Scholes call option on V, current value of the firm's pre-tax cash flows, with an exercise price equal to K, value of the firm's existing tax shields. Now suppose the proposed asset alone is expected to produce a tax liability given by G(W, J), where G, W and J are defined similarly as G, V and K in G(V, K). When the proposed asset is acquired, the total tax liability of the firm becomes a call option on V + W, with an exercise price equal to K + J. Moreover, the volatility variable applicable to this call option is the variance of V + W, which is $\sigma^2 = \sigma_V^2 + \sigma_W^2 + 2\rho_{VW}\sigma_V\sigma_W$, where σ_V^2 is the volatility of the cash flows from the firm's existing assets, σ_W^2 is the volatility of the cash flows from the proposed asset, and ρ_{VW} is the correlation coefficient between the two. Thus, the firm's tax liability after acquiring the proposed asset depends on the correlation factor ρ_{VW}. Clearly, therefore, the firm's assets interact via taxation, which is a relevant concern when choosing among investment opportunities.

Interaction Between Investment and Financing

Under the tax asymmetry, the independence between investment and financing decisions will also break down, the primary reason being that the asymmetry penalizes the volatility in the firm's pre-tax cash flows. Given the risk profile of an asset's operating cash flows, one would choose a mode of financing so as to minimize the volatility of the firm's pre-tax cash flows. Thus the independence between investment and financing decisions breaks down. As an illustration, take a stand-alone asset whose pre-tax operating cash flows are stable. For such an asset, pure debt financing would be appropriate from a tax standpoint because there is a low probability that the interest tax shields will become useless tax losses due to insufficient operating cash flows generated by the asset. Conversely, if the asset's operating cash flows are highly volatile, debt financing may not be appropriate because the interest tax shields are more likely to expire as useless tax losses. In sum, the tax asymmetry can impose a constraint on the choice of financing given an investment decision, contrary to conventional wisdom of independence under the assumption of a linear tax function.

This section has addressed several immediate consequences of the tax asymmetry for managerial analysis. The illustrations are far from being exhaustive. A partial list of further applications would include the impact of the tax asymmetry on performance evaluation, transfer pricing and leasing, as well as short-run decisions such as breakeven analysis.

CONCLUSION

This note argues that the asymmetry of the income tax structure with respect to profits and losses is a relevant concern for asset valuation and managerial analysis. Under the asymmetry, the tax function is progressive and the marginal tax rate is endogenous. This complicates asset valuation on a net-of-tax basis and renders the traditional approach of assuming a proportional tax based on an exogenous tax rate inappropriate. Because of the tax asymmetry, the firm's tax liability is analogous to a call option. The appeal of the call option analogy is that it reduces a host of variables that determine the tax liability to a handful. A numerical example is used to illustrate the behaviour of the marginal tax effect using this notion of the tax liability.

Characterizing the tax liability as a call option also leads to a number of interesting properties of the tax function. most importantly, the tax liability is a non-linear function of both the pre-tax cash flow and the tax shield. In addition, the tax liability is an increasing function of the volatility of the pre-tax cash flow. Most of the managerial implications of the tax asymmetry can be derived from these two properties. Due to the non-linearity property, asset values are non-additive on a net-of-tax basis, causing a breakdown of the entrenched principles that asset decisions are independent and that investment and financing decisions are independent. As a consequence of the property that volatility in the pre-tax cash flow will increase the tax liability, entrenched principles of irrelevance of asset diversification, conglomerate merger and the like become questionable. Together, these two properties suggest that traditional capital techniques that treat an asset acquisition as a stand-alone decision fail to recognize some important dimensions due to the tax effect.

Since income taxation permeates all economic activities, an effective constraint caused by the tax asymmetry will likely have a pervasive effect from both a public and private standpoint. This note attempts to present a small sample of the potential applications in managerial analysis. Future investigations can focus not only on further implications of the tax asymmetry for the firm's behaviour, but on the asymmetry's impact on policy analysis.

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Goodwill—an Example of Puzzle-Solving in Accounting—a Comment

Ma and Hopkins' (1988) paper on accounting for goodwill derives insupportable conclusions because its analysis is based on an inappropriate paradigm. This comment presents a supportable rationale for capitalization and amortization of purchased goodwill and concludes that the 'unsolved puzzle' that Ma and Hopkins present is likely to be a corroborating example for the 'old' matching-based paradigm and a confounding example for the 'new' valuation-based alternative.

Key words: Accounting policies; Goodwill; Historical cost accounting.

Irrelevant Puzzle?

Ma and Hopkins (M&H) in their (1988) paper on the accounting treatment of goodwill suggest that accountants have erred by misunderstanding the true nature of goodwill. Furthermore, they conclude that any attempt to account for goodwill by recognizing it and amortizing it within a transactions-based historical cost setting is unlikely to succeed. This comment contends that their perceptions are irrelevant to the practice of accounting because they are based on an accounting paradigm which is inconsistent with present internationally recognized practice. They state that 'In accounting an example of a puzzle "unsolved... in the old [historical cost] framework" is provided by the calculation and reporting of goodwill'. By implication, they perceive this puzzle as a corroborating example of the new paradigm that balance sheets should show the worth of the firm and net profit should represent the change in net wealth during the period.

The nature of both internally generated and purchased goodwill is reviewed by M&H. In both cases they perceive goodwill as the present value of the 'future stream of superior earnings of the business' which presumably means the present value of the stream of cash flows associated with the superior earnings. Although their basic conception of goodwill appears logically to be correct, their detailed calculations can be challenged and alternative formulations proposed. Nevertheless, M&H seem to be correct in their assessment that potential synergies in the businesses of acquired and acquiring firms imply that the conventional calculation of goodwill may incompletely capture the total value of goodwill to the acquirer. This observation might be thought to imply that M&H are correct when they conclude that

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> internally generated goodwill, which has a meaningful economic interpretation... is *not* recognized, while goodwill on acquisition *is* recognized although, as recorded by accountants, it cannot be interpreted meaningfully and is not identifiable with a specific source. By choosing to identify this latter category of goodwill exclusively with the purchased entity, accountants have opted for convenience rather than reality. The manifest danger is the practice of Alice-in-Wonderland accounting, which will lead inescapably to a loss of professional credibility in the business community.

This paper contends that M&H have imposed the mutually exclusive rules of the valuation-based paradigm on the matching-based paradigm that underlies accounting practice (see e.g., U.K.'s SSAP2, *Disclosure of Accounting Policies*, for an authoritative view on the role of the accruals or matching concept as a fundamental accounting concept). Their analysis then logically follows from the valuation approach, but as that does not underlie current practice their conclusions concerning the practical accounting treatment of goodwill are irrelevant.

In addition, a matching-based rationale to support the capitalization and amortization of purchased goodwill is outlined to demonstrate that goodwill does not represent the unsolved puzzle that M&H perceive it to be.

Economic Significance

M&H base their conclusions on the impossibility of deriving economically meaningful valuations of goodwill from the accounting valuation process. As indicated above, they derive the economic values of goodwill from figures of present values of superior earnings. Given the interrelationships between all resource inputs to the firm, it is then only possible to identify such values by reference to the total flows of the firm. (The economic value of goodwill being the difference between the total value of the firm and the aggregate of the values of separable net assets.) Consequently, if the objective of the valuation exercise is merely to ascertain total firm worth, inaccuracies in estimating the figure of goodwill because of errors in valuing separable net assets do not matter. However, because the worth of goodwill is necessarily entirely dependent on the uncertain future prospects of the business concerned, and can therefore be expected to be more uncertain than the values of separable assets, the shareholder and others to whom management report via the published financial statements are likely to be interested in the breakdown of total firm worth between different classes of assets. In that case, it may be important to note the analysis below, which suggests that the M&H analysis potentially understates the value of goodwill in markets that are not perfect and demonstrates significant differences in the prices for the purchase and the sale of assets.

M&H state that the fair value of assets should be determined by reference to their replacement cost. That valuation basis sets an upper limit to their value under the deprival-value-based type of reasoning (see e.g., Bonbright, 1937; Baxter, 1971). However, there are strong arguments suggesting that the more realistic basis for establishing fair values is the sale value of the identifiable assets. Rationally, after acquiring a business, the new controlling management will review its portfolio of resources and will dispose of those assets that it considers are not worth retaining. Consequently exit value can be considered to be the lower limit on valuation. There is no reason for management to dispose of an asset merely because its value in use is less than replacement cost, so that figure potentially overvalues separable net assets and therefore potentially undervalues goodwill. This can then generate the negative goodwill that M&H consider to be a 'contradiction of terms'. The prudent basis for determining book value is surely to use the net realizable value (NRV) of identifiable assets. (A further argument for using NRV's in a matching context is that they represent the cash invested, because the new management decided not to sell the assets, and consequently represent opportunity costs which are equivalent to cash outlays. See Grinyer, 1987.)

The major problem that M&H perceive with the valuation of acquired goodwill arises because synergies between the operations of acquired and acquiring businesses are likely to create incremental cash flows that cannot be identified (because they are not separable from the other ongoing flows from activities existing before the acquisition) and are not necessarily valued in the purchase price paid for the acquired firm. This implies that the standard calculations are likely to understate the worth of goodwill, so that an accounting figure for purchased goodwill 'cannot be interpreted meaningfully and is not identifiable with a specific source'. Their conclusion concerning economic meaning is presumably associated with their implied perception that the accounts are designed to show economic values. In fact they are not so designed, and both professional associations and academics have in the past clearly indicated that fact.

Conventional practice utilizes transactions-based historic cost accounting (HCA) which is based on the concept of matching costs to revenues, either directly or by reference to accounting periods. It has always been accepted that under the matching approach the figures on the balance sheet are unmatched costs and not indications of the worth of the assets. Thus ICAEW Statement of Accounting Principles N9 (issued in 1945) states:

> Fixed assets, whatever their nature or the type of business in which they are employed, have the fundamental characteristic that they are held with the object of earning revenue and not for the purpose of sale in the ordinary course of business. The amount at which they are shown in the balance sheet does not purport to be their realizable value or their replacement value, but is normally an historical record of their cost less amounts provided in respect of depreciation, amortization or depletion.

Similarly Barton (1977) states:

> most assets other than monetary ones are simply resources waiting to be used up in the process of earning revenue, and whose costs will be matched as expenses against the revenue of the periods which they benefit. They are stores of future expense, and the cost of the asset is 'expensed' as the asset benefits revenue. (p. 75)

It is clear that the transactions-based matching approach does not *require* the valuation of goodwill or of any other assets, in the sense of establishing their worth. Instead it needs the establishment of the *cost*, that is, the amount that was paid for the asset. That figure is then used as the basis for the book value of the asset until such time as it is fully expensed against revenue.

Given that conventional practice in most countries is based on the matching conception, as opposed to the valuation approach,[1] M&H's concern over the non-recognition of internally generated goodwill whilst recognizing purchased goodwill seems to be unnecessary. The costs of advertising, staff training, product development and other revenue expenditure that in total contribute to self-generated goodwill have in total already been charged to a profit and loss account. (The difficulties of disentangling the cost of self-generated goodwill from other costs is widely recognized to be sufficient to prevent any attempt to capitalize such goodwill. See, e.g., para. 1.5 of the introduction to ED47, *Accounting for Goodwill*, issued by the U.K.'s Accounting Standards Committee in February 1990.) When capitalized purchased goodwill is amortized it also is charged as an expense to profit and loss account. It follows that the difference in treatment of self-generated and purchased goodwill relates to the timing of expensing their cost and not to their effect on aggregate profit over time. Consequently any inconsistency in treatment derives from the practicalities of identifying and recording the costs of internally created goodwill and not from fundamentally different theoretical conceptions.

The above arguments have shown that the M&H conclusions are inappropriate to accounting practice because they are based on analysis using the valuation, instead of the mutually exclusive matching paradigm. Few people would disagree with the view that HCA is not a sensible approach to establishing a figure of profit that represents the difference between the total worth of the firm at the beginning and end of the accounting period. Yet such a perception of profit is irrelevant to HCA, which is only supportable at all by reference to the generally accepted matching conception.

A Case for Capitalization and Amortization

It is interesting to note the U.K. House of Lords' decision in *Caparo Industries* v. *Dickinson* and others (see e.g. *The Financial Times*, 22 February 1990, p. 16). The dictum in that case indicates that in law the purpose of accounts is primarily to enable shareholders to exercise their powers at the annual general meeting. This judgment supports the stewardship (accountability) perception of the purpose of accounting. Grinyer and Lyon (1989) consider the qualities of accounting that are best suited for such a role of monitoring (and presumably motivation) and conclude that an *ex post* realized profit figure is required. So their analysis supports the view that matching- rather than valuation-based approaches are most suitable for the primary purpose indicated.

There can be little argument that HCA is a far from perfect approach to accounting in the periods of high interest rates and of significant levels of inflation currently being experienced. The discussion of the ways in which HCA may be improved by alternative matching-based approaches is, however, outside the scope of this note,[2] which therefore proceeds by considering how the HCA matching approach may best be achieved.

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[1] See Grinyer (1987a, p. 18) for a fuller discussion of valuation and matching models.

[2] Grinyer (1985 and 1987b) outlines one alternative model.

Given the accountability role assumed for financial reporting, it seems to be important that management should be required to expense through the profit and loss account all outlays (costs) that have been incurred to achieve additional revenues over time. Acquired goodwill is, by definition, such an outlay. The matching convention requires that such a cost be spread by reference to the pattern of inflows that it generates. Obviously it is impossible to establish objectively what that pattern is likely to be and informed judgment is required. Realistically, the future cash flows generated by purchasing goodwill do not extend over an unlimited period. They will inevitably cease as the impact of the events that created the goodwill declines and disappears over time. (Most future goodwill eventually will be generated by subsequent activities.) It therefore seems reasonable to recommend that, at the date of acquisition, management should estimate the time pattern of benefits from goodwill and announce it by way of a note in the annual accounts, supported with a statement of the reasons underlying the adoption of the pattern. The maximum time over which write-off might occur is obviously a matter of judgment, but it is unlikely that in the dynamic, internationally competitive, economic and technological environment facing modern businesses a life of more than ten years could typically be justified. (Note that IAS E32, 1989, proposed amortization over a period which should not normally exceed five years.)

On the basis of the above arguments, the primary stewardship purpose of financial statements is served best by capitalizing and amortizing goodwill. (A more detailed analysis supporting this position is provided by Grinyer *et al.*, 1990.) Obviously a comprehensive discussion of such a major issue cannot be achieved within a short note such as this.

An Irrelevant Puzzle

M&H provided an interesting review of the valuation of goodwill and its relevance for an accounting approach that may be perceived as an alternative to the matching model currently used. Their analysis indicated that it is impossible to estimate the worth of purchased goodwill reliably, so that in their opinion it cannot sensibly be included in establishing figures of the firm's worth. That conclusion reveals an 'unsolved puzzle' in the alternative (valuation) based approach. It should therefore be viewed as a 'corroborating example' of the 'old' matching paradigm. This conclusion appears to be the exact opposite to the one that M&H attempted to establish!

ABACUS, Vol. 28, No. 1, 1992

RONALD MA AND ROGER HOPKINS

Goodwill—an Example of Puzzle-Solving in Accounting—a Reply

Grinyer and Russell's (G&R, 1992) contention that Ma and Hopkins (1988) have imposed the mutually exclusive rules of the valuation-based paradigm on the matching-based paradigm that underlies accounting practice is overly defensive and misguided. Our 1988 paper was an attempt to throw light on why there was so little agreement on the rules governing the treatment of goodwill. G&R's comment does not change our view that the only answer to the 'puzzle' lies in the lack of a full understanding of the nature of goodwill.

Key words: Accounting policies; Goodwill; Historical cost accounting.

Grinyer and Russell's (G&R, 1992, p. 107) contention that 'M&H [Ma and Hopkins, 1988] have imposed the mutually exclusive rules of the valuation-based paradigm on the matching-based paradigm that underlies accounting practice' is overly defensive and misguided.[1] Their contention seems to be artificially forcing an issue. Under extant accounting practice, assets at the date of acquisition (whether the asset is obtained by way of purchase, lease, exchange or endowment) are recorded at the acquisition cost in the marketplace at that date. This initial record provides a common meeting ground of the valuation-based and matching-based paradigms. The adoption by M&H (p. 77) of a 'dynamic open system' perspective of the firm signals a commitment to such a common meeting ground in the search for insights into the nature of goodwill. The analysis led M&H (p. 84) to conclude that 'the search for a correct method of recording and amortizing goodwill within the historical cost framework is unlikely to succeed'. We would have thought this to be a fairly neutral stance.

One can hardly deny the continuing state of confusion over accounting for goodwill. Re-examining the underlying economic nature of the resource involved is an acceptable strategy in such circumstances (e.g., see Grinyer, 1987). G&R (p. 107) do less than justice to our analysis in their interpretation that 'in both cases [internally generated and purchased goodwill] they [Ma and Hopkins] perceive

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[1] G&R (1992, pp. 108) are also misguided in their argument that fair value should be interpreted as net realizable value following a 'deprival value' reasoning. Ma (1976) is not a follower of the deprival value school.

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goodwill as the present value of the "future stream of superior earnings"'. The correct interpretation of our analysis is given below.

There are two kinds of goodwill arising on acquisition. First, where the acquired company is expected to remain operationally an autonomous entity, goodwill on acquisition, or the so-called 'purchased goodwill', is analogous to internally generated goodwill (M&H, p. 78). Goodwill on acquisition then may be viewed as the capitalized value (i.e., the present value) of the future stream of superior earnings of the acquired company (p. 76).

Second, where the acquired company is expected to be integrated with the acquirer, the goodwill arising on acquisition cannot be given any economic interpretation. It is simply the outcome of an arithmetical calculation, that is, subtracting from an amount paid for the capitalized value of the incremental stream (given by the difference in the acquirer's expected earnings with and without the acquisition[2]) the fair value of the acquired company's identifiable net assets. Not only does the purchase price depend on bargaining skills and knowledge asymmetry, but the incremental earnings stream might reflect only partly the use of the acquired company's assets and partly the acquirer's existing assets (p. 79). Other scenarios are also possible. M&H (p. 82) noted the extreme case in which all the earnings previously generated by the acquired company's operations may be displaced and/or its identifiable assets disposed of after acquisition. (Under the latter circumstances it would be correct to measure the acquired assets before their disposal at their net realizable value.) Another extreme situation is one in which an acquired company's assets comprise patents and trademarks, and the purpose of the acquisition lies in locking up those assets in order to protect or enhance the acquirer's earnings.

The emergence of purchased goodwill is triggered by an acquisition event, but this event should not be perceived as acquiring an asset in similar fashion to one bought from some outside party in a neat parcel, nor one exclusively associated with the acquired entity. Purchased goodwill is often not identifiable with a specific source of future benefits and this lack of an identifiable source results in largely arbitrary, and even conflicting, judgments about amortization within the matching process. Despite these circumstances G&R (p. 110) still see a role, within the stewardship (accountability) perception of the purpose of accounting, for 'monitoring (and presumably motivation)' of management.[3]

The introduction by G&R of the role of accounting in motivating management places a premium on the cautionary view expressed by Ijiri (1983), who observes that the accountability-based (historical cost) framework is fine so long as there is a high level of agreement between the accountor and the accountee as to the 'information content and rules of preparation'. An 'agreed-upon set of rules' is essential for the accounting system to meet its objective, that is, 'to provide a fair system of information flow between the accountor and the accountee' (Ijiri, 1983, p. 80). If this agreement is not present, accounting numbers hardly provide a satisfactory basis for monitoring, let alone motivating, corporate managements.

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[2] M&H (p. 80) incorrectly used the terms 'before' and 'after' the acquisition, which implied a sequential process.

[3] Grinyer, Russell and Walker (1990) take a definitive view of the motivating role of accounting when assuming that the 'most fundamental and therefore, primary purpose of accounts is the monitoring and motivation of management' (p. 225).

Our paper was an attempt to throw light on why there was so little agreement on the rules governing the accounting treatment of goodwill. The answer in our opinion lies in the lack of a full understanding of its nature, particularly goodwill arising from corporate acquisitions. Without that understanding, and an agreed set of rules incorporating that understanding, no amount of forced 'matching' is likely to solve the 'unsolved puzzle'. Certainly 'the dynamic, internationally competitive, economic and technological environment facing modern businesses' envisaged by G&R (p. 111) promises little relief for accountants.

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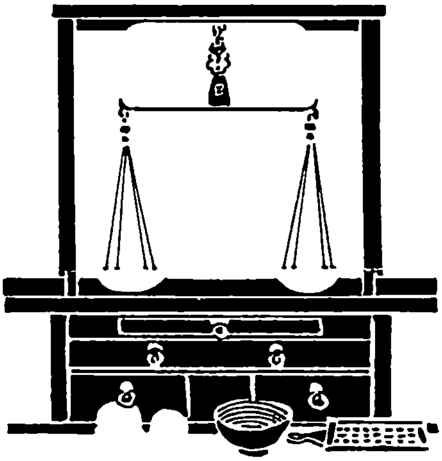

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Number 85 **CONTENTS** **Winter 1991**

The Accessibility and Perceived Usefulness of Information on the Capital Expenditure Intentions of U.K. Quoted Companies	K. Al-Qudah M. Walker A. A. Lonie
The Relationship Between Earnings, Funds Flows and Cash Flows: Evidence from the U.K.	A. J. Arnold C. D. B. Clubb S. Manson R. T. Wearing
An Examination of Audit Delay: Further Evidence from New Zealand	Charles A. P. N. Carslaw Steven E. Kaplan
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The Effect of Cum- to Ex-Dividend Changes on U. K. Share Prices	Mavis Crossland Michael Dempsey Peter Moizer
Managerial Choices in the Valuation of Acquired Goodwill in the U.K.	John R. Grinyer Alex Russell Martin Walker
The Effects of Management Accounting Systems and Environmental Uncertainty on Small Business Managers' Performance	Ferdinand A. Gul
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MONOGRAPH NO. 8

Graeme Dean, Marc Joye and Paul Blayney: Strategic Management Accounting Survey: Overhead Cost Allocation & Performance Evaluation Practices of Australian Manufacturers. 1991. pp. 144 + x.

Suggestions that the manufacturing sector is facing a crisis have been a recurring feature of the financial press over the last 18 months, but until recently there has been a dearth of material on manufacturing in general and management accounting practices in particular. Research for *Monograph No. 8* was started in August 1990 at the instigation of the National Industries Extension Service (NIES). It followed an earlier more general study on the subject in 1990, resulting in *Monograph No. 7, Cost and Management Accounting Practices In Australian Manufacturing Companies*, by Marc Joye and Paul Blayney, 1990.

Monograph No. 8 is descriptive, and it is hoped that the data provided will enable government agencies, practitioners, consultants and academics to increase their knowledge about current practices in manufacturing companies operating in Australia. Further, these results should help in identifying potential problems and obstacles to improving cost-allocation and performance-evaluation practices. The results presented in this report are therefore part of an ongoing process aimed at improving the efficiency of Australian manufacturing.

The major findings of *Monograph No. 8* are:

1. Respondents, in varying proportions, indicated that changing from a direct-labour-based cost allocation to activity-based costing, strategic costing or product-life-cycle costing would result in a reporting system superior to current practice based on direct labour-based cost allocations.
2. Managers, however, indicated a reluctance to change because of the cost, time and effort required, as well as the general uncertainties associated with change.
3. *Absolute* rather than *relative* accounting measures of performance are used more; and *accounting* rather than *non-accounting* data are predominantly used for performance evaluation.
4. The variations in responses, coupled to the diversity in cost structures across industries, suggest that there is unlikely to be one reporting system that will satisfy the resulting diverse needs of respondents.
5. Managerial uncertainties could be obviated by investigating, on an industry-by-industry basis, the appropriateness of particular accounting methods for improving the efficiency of manufacturing firms.
6. Consequently we recommend that NIES should consider commissioning field-based research (case studies, field studies and questionnaires) centred on particular industries to provide information on cost structure, thereby enabling the development of allocation models to enhance production efficiency and performance-evaluation practices.

More specifically, the monograph comprises survey results, broken down by industry, size and other firm- and economy-wide variables. This material is summarized in 38 Tables.

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ABACUS, Vol. 28, No. 2, 1992

TERESA ANDERSON

Accounting Earnings Announcements and Differential Predisclosure Information

Recent studies have detected an inverse association between a firm's size and the stock price reaction to the firm's accounting earnings announcements, which has been interpreted as evidence that larger firms have relatively richer information sets. This study expands on this work, using two firm-specific factors to capture both the time and flow-per-period elements of information production (period of listing and firm size respectively) and examines whether these variables are a better information proxy than is size alone. After controlling for firm size, a statistically significant inverse relationship between a firm's period of listing and the information content of its annual earnings announcement is detected. The findings have implications for standard-setters as well as for auditors' assessment of the risk associated with audits of newly listed firms.

Key words: Accounting; Earnings; Disclosure.

Reaction by investors to firms' accounting disclosures, particularly inter-firm differential reaction, is a topic of concern to the accounting profession. Standard-setting bodies are charged with weighing the costs and benefits of disclosure rules, and studying stock price changes is one way to observe disclosure effects. Atiase, Bamber and Freeman (1988) address the FASB's and the SEC's adoption of differential disclosure requirements that exempt small firms from certain disclosures and suggest that differential stock price reaction studies be used as input to the standard-setters' deliberations in this area. Partners in public accounting firms, engaged in assessing the riskiness of their audit engagements, can also use investor reaction to information as a measure of reliance in assessing loss exposure. When effective competing sources of information exist, the possibility that accounting information, attested to by the auditor, could mislead the market is reduced, since there is less reliance placed on it (Anderson, 1977). Despite this, audit firms' business risk models typically do not incorporate user dependence, or any other aspects of the user environment, into assessments of risk.

Recent research suggests that investors' reactions to the accounting earnings disclosures of small firms are more pronounced than the reactions to those of large firms. Zéghal (1984), Atiase (1985), Bamber (1986, 1987), Freeman (1987), Ro (1988)

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Valuable comments from Ieuan Morgan, Dan Thornton, Hamish Taylor, Gordon Richardson, Haim Falk and an anonymous referee are gratefully acknowledged.

and Kross and Schroeder (1989) are among those to provide evidence that small firms' earnings announcements generate more price and/or volume reactions than do large firms' earnings announcements.

These researchers argue that a firm's earnings figure will convey more information when the level of predisclosure information about that firm is low and that firm size can be used to measure the relative richness of predisclosure information sets. For reasons explained later, this paper suggests that period of listing, together with firm size, is a better information proxy than is size alone and conducts an analysis on joint firm size and period of listing effects.

Analysis is conducted on over 1,600 firms listed on the NYSE from 1974 to 1982. The main analytical tool is a multiple regression model and the results are analysed by standard statistical procedures. After controlling for firm size, a statistically significant inverse association is observed between a firm's period of listing and the information content of its annual earnings announcement. The presence of other announcements made around the earnings announcement date affects the measurement of earnings' information content and is also specifically controlled for.

THEORY AND HYPOTHESIS

Models of differential information have been developed by Klein and Bawa (1976, 1977), Atiase (1980), Holthausen and Verrechia (1982), Richardson (1983), Barry and Brown (1984, 1985) and Anderson (1987). In these environments, there exists more information about some firms than about others. For the low information firms, a single signal conveys more information than does a similar signal about a high information firm.

Most empirical research to date has used firm size as a surrogate for availability of predisclosure information, arguing that larger firms have a larger body of stakeholders and, thus, a larger demand for information on these firms exists. On the supply side, information producers (Moody's, *Wall Street Journal*, etc.) have incentives to produce and sell information on those firms.

But such information asymmetries among publicly traded firms lead to adverse private and social consequences (Lev, 1988). These consequences provide the rationale for mandated disclosures by the SEC and accounting standard-setting bodies. Thus it is important, in the financial reporting environment, to be able to identify those firms with a relatively sparse information set. Prior research that has, on the basis of the above arguments, examined firm size as an important variable has documented a statistically significant inverse relationship between a firm's size (measured by the market value of its equity) and the information content of its earnings announcement. This is interpreted as evidence that firm size is directly related to public information availability. But other variables may also be useful in identifying firms with differential information sets.

The motivation for examining period of listing comes from three sources:

1. The notion of a predisclosure information set is a stock concept. Intuitively, we would expect this stock to be affected by both a process and a time element.

If firm size captures the incentives for information production per period of time,[1] period of listing may be able to capture the time element for which that process of public information production has been in place.[2]

2. Empirically there is some support for period of listing as a measure of predisclosure information. In the finance literature, Barry and Brown (1984) find that using firm size and period of listing jointly as information surrogates is useful in explaining the size effect first documented by Reinganum (1982) and Banz (1981).
3. Additional support for including a time element in the measure of predisclosure information is provided by the work of Anderson (1987). There, the results of Bayesian analysis, closely related to those of Holthausen and Verrecchia (1982) and Richardson (1983), suggest that the information content of a firm's annual earnings announcement is inversely related to the number of periods for which information about that firm has been produced. Despite the limitations of such a Bayesian framework (single person setting, etc.), it provides useful insights into the possible factors that affect the relative richness of the predisclosure information set and further motivates the examination of a time factor (see Anderson 1987).

Thus, the motivation for examining firm period of listing comes from intuitive arguments, published empirical findings in related areas and theoretical analysis. The arguments of Zéghal (1984) and Atiase (1985) support the selection of firm size as an appropriate empirical proxy for firm-specific information production per unit of time.[3]

It is argued here that, all else being equal, for those firms with similar data production and dissemination processes, prior information available about a firm is directly related to the length of time that the firm has been in the public capital market. Further, it is argued that for a given period of listing, prior information available about a firm is directly related to the incentives that exist for private information production and dissemination with respect to that firm, and that these are greater for larger firms.

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[1] There is undoubtedly some information decay over time. The only assumption necessary to drive the analysis provided in this paper is that, despite decay, information value is still positive (> 0) after one period. With this assumption, a constant rate of information production will lead to an increasing pool of predisclosure data.

[2] Period of listing was selected over the number of years since incorporation as the appropriate variable to measure this time element since the earnings figures of a firm for the years prior to listing are, in general, either unavailable or relatively costly to acquire. Thus, period of listing is a better measure of the time frame for which earnings figures relevant for making capital market decisions are truly in the public domain. Research by Barry and Brown (1984, 1985) also supports, both theoretically and empirically, use of the period of listing variable as an appropriate proxy for differential prior information.

[3] The arguments centre on economies of scale in the production and dissemination of information, on the value of information being related to the availability of substitutes and complements, and on the chance of an information item affecting price.

Since prior research has examined the effect of firm size, this research concentrates on the hypothesized period of listing effect. The specific hypothesis to be tested, stated in its null form, is:

H_O: after controlling for a firm's size, the information content of that firm's annual earnings announcement is not related to its period of listing.

RESEARCH DESIGN

The prime method of analysis used in this study is a series of cross-sectional regressions of excess stock returns on firm-specific variables.

Model Specification

The model in its complete form is specified as:

$$IC_{it} = \delta_o + \delta_1 MV_{it} + \delta_2 PL_{it} + \delta_3 DS_{it} + \delta_4 Ann_{it} + v_{it}.$$

1. IC_{it} = the information content of firm i's earnings figure in time t, measured as follows:

   $$IC_{it} = \frac{\hat{e}_{it}^2}{\hat{S}_i^2}\text{, where } \hat{e}_{it} = R_{it} - (\hat{\alpha}_i + \hat{\beta}_i R_{mt});$$

   R_{it} = return on stock i at time t, the earnings announcement period;

   R_{mt} = return on the value-weighted market portfolio on the CRSP Daily Stock Index file at time t;

   $\hat{\alpha}$ and $\hat{\beta}$ = estimates of the market model parameters derived from the stock return data in the estimation period; and

   $$\hat{S}_i = \hat{\sigma}_i^2 \left(1 + \frac{1}{60} + \frac{(R_{mo} - \bar{R}_m)^2}{\sum_{t=1}^{60} (R_{mt} - \bar{R}_m)^2} \right)$$

   The above specification of IC is consistent with many previous studies and particularly with those of Ro (1988) and Atiase (1985), which examined the size variable alone. The earnings announcement period is the firm's earnings announcement day (day 0) and the day preceding this (day −1). The coefficients of the market model were estimated using two-day rates of return for each firm,[4] computed from the CRSP Daily Stock Return file for a 120-day period, covering days −121 to −2, yielding sixty observations for the parameter estimation period.[5]

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[4] The announcement effect test period is the two-day trading period that encompasses the publication date of the earnings announcement in the WSJ (day 0) and the preceding trading day (day −1), since it cannot be determined readily from published sources whether the initial post-announcement market transaction preceded or followed the close of trading on the trading day prior to the published announcement in the WSJ (Dann, 1981).

[5] A relatively short estimation period was selected so that the sample could include newly listed firms.

2. MV_{it} = the natural log of firm i's equity market value at time t.
   The firm's common stock equity as of the month-end immediately preceding the earnings announcement is obtained from the CRSP Monthly Stock Master file. Because the data are not available on the CRSP tapes, and because Atiase's (1985) results were no different when market value was measured as marketable debt plus equity, rather than equity alone, only the equity measure is used here. The market value variable is converted to its natural logarithm to be consistent with prior research in this area.
3. PL_{it} = the reciprocal of firm i's period of listing at time t.
   Period of listing is measured by the number of years from the time price information for the firm first appears on the monthly CRSP tapes to the earnings announcement date (EAD). The period of listing variable is converted to its reciprocal for the analysis described in section 4.[6] The reciprocal of period of listing is consistent with the Anderson (1987) and the Barry and Brown (1984, 1985) models.
4. DS_{it} = a dummy variable, assigned a value of 1 if firm i announced a dividend or stock split ± 5 trading days of the EAD and 0 otherwise.
5. Ann_{it} = a dummy variable, assigned a value of 1 if firm i made an announcement of any other type ± 5 trading days of the EAD and 0 otherwise.[7]
6. The normal assumptions about v_i, the error term, are made.

Sample Selection

The period 1974 to 1982 inclusive was selected for study to reduce the cross-sectional correlation that may result from announcement clustering. Data were collected by first creating a list of all firms with at least three months of price data on the CRSP NYSE Monthly Return tape during the period 1974 to 1982, which identified 1,775 firms. One calendar year (from 1974 to 1982) was randomly selected for each firm.

To be included in the sample, two criteria had to be met:

1. The annual earnings figure of the firm was announced in the *Wall Street Journal* (WSJ) during the year selected for study.
2. The firm has daily return data available on the CRSP tape for the earnings announcement period and has no more than ten days of return data missing for the 120-day period used for parameter estimation.

Imposing these criteria on the data resulted in a sample set of 1,617 firms being generated for analysis. These procedures introduce a selection bias that limits the extent to which the results can be generalized.[8]

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[6] The Results section reports empirical results consistent across various transformations of both the period of listing and size measures.

[7] Capital market price movements in response to announcements of dividends and stock splits have been documented in the literature and it is common to control for these types of announcements. The confounding effects of other announcements around the EAD are an aspect not always considered in research of this type. Because it is a distinguishing feature of this research, other announcements are discussed separately from dividend and stock split announcements.

[8] Including AMEX firms in the sample would have increased the generalizability of the results. However, there is evidence that the two markets possess distinctive characteristics (Grant, 1980). Differences

RESULTS

Analysis of Variables

Table 1 provides descriptive data on the 1,617 sample firms' betas ($\hat{\beta}_i$), the information content variable (IC), the market value and the period of listing variables and the distribution of the EADs across time. Atiase (1985) calculated a mean weekly revaluation index of 2.2 and Ro (1988) calculated a one-day mean standardized residual return of 1.52. The range of the market value variable in this sample is similar to that of Ro's (1988) sample. Examination of the distribution of the transformed market value variable (not presented here) suggests a distribution that closely approximates normal; 95.7 per cent of all observations fall within two standard deviations of the mean. The distribution of the sample over time suggests that event-day clustering is not a problem in this study. The largest number of announcements on any day is twelve and only 1 per cent of the firms in the sample announced their annual earnings in the first week of January. An additional 20 per cent reported in the later weeks of January with 79 per cent of the firms reporting in months other than January. Since the strongest January effect (Keim, 1983) is found in the first week of January, it does not appear as though this sample is particularly vulnerable to this potential source of confounding effects.[9]

Relationships between Variables

This first stage of the analysis runs a multiple regression, excluding the period of listing variable, on the 1,617 individual firms. The individual firm results are not presented here, however, because an analysis of the residuals from that regression suggests than an individual-level analysis may be confounded by the skewness of the information content variable.[10] Because of this skewness, and also that the data are subject to the problem of errors in variables, the sample firms are grouped into portfolios for all subsequent analysis. Twenty-five portfolios are formed as follows:

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in the returns, sizes, or information environments of the firms on the two exchanges may confound the results. In the interest of internal validity, therefore, the sample is restricted to NYSE firms. Further, the range of market value variables included in this sample is comparable to that of Ro (1988), who examined both AMEX and NYSE firms, suggesting that, other things being equal, the likelihood of detecting a size effect ought to be the same as it was in Ro's (1988) study.

[9] Clarkson and Thompson (1987) provide evidence of overstated estimates of beta and understated measures of abnormal returns for low information firms when historical returns are used for beta estimation. Their Table 2 suggests, however, that, when daily returns data are used, the beta adjustment process is virtually complete by the tenth day after listing. Since all the firms in this sample are older than 120 days, beta estimates for this sample are not likely to be significantly biased.

[10] Alternative specifications of the IC variable (such as $\frac{e_i}{S_i}$) may have mitigated this, but most previous researchers used the squared value and consistency with prior methodology is generally desirable. Further transformations of the squared value to correct skewness would remove the variable even further from a straightforward interpretation in terms of information content.

1. The 1,617 firms are ranked by market value and are split into 5 portfolios of approximately equal size.
2. The firms in these portfolios are ranked within each portfolio by period of listing and formed into five sub-groups of approximately equal size.[11]

TABLE 1

DESCRIPTIVE STATISTICS ON THE 1,617 FIRMS IN THE SAMPLE

Panel A	Mean	*SD*	Minimum	Maximum
$\hat{\beta}$ (market model beta)	1.000	.589	-.848	2.952
IC (price reaction in announcement period)	2.02	4.80	.0000	61.38
Equity market value (size in $000s)	463,700	1,420,000	1,900	38,675,000

Panel B	Period of listing (in years)	No. of observations
	1	68
	2–5	350
	6–15	518
	16–30	276
	31–52	405
		1,617

Panel C	Year of earnings announcement	No. of observations
	1974	192
	1975	189
	1976	168
	1977	162
	1978	178
	1979	160
	1980	170
	1981	176
	1982	222
		1,617

The portfolio values are simple averages of the individual values, and are not value-weighted. The DS and Ann variables represent the percentage frequency with which these announcements appear for firms in the portfolios. Table 2 presents the correlation matrix for the portfolio sample. It is apparent that strong relationships exist among certain of the variables. Firms with announcements (of any type) in the WSJ around their earnings announcement dates are larger and have been listed longer than firms without these other announcements. These relationships are consistent with the discussion above: there is a direct relationship between a firm's size and the existence of publicly available information about that firm (announcements of all types). Firms that issue dividend announcements are also more likely to make announcements of other types around their EADs. With respect to the period of listing variable, as expected, the larger firms tend to be those that have been listed on the NYSE the longest (the coefficient is negative because the reciprocal of PL was used). The newly listed firms make fewer dividend and other announcements around their EADs.

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[11] As described below, using alternative portfolio construction techniques and repeating the analysis led to very similar results.

TABLE 2

PEARSON CORRELATION COEFFICIENTS BETWEEN THE INDEPENDENT VARIABLES FOR THE TWENTY-FIVE PORTFOLIOS (PROB)

		MV	PL	DS	Ann
Ln size	MV	1.00			
Reciprocal of period of listing	PL	0.27 (.199)	1.00		
Announcements of dividend/splits	DS	.50 (.011)	−.20 (.334)	1.00	
Other announcements	Ann	.82 (.000)	−.55 (.004)	.48 (.016)	1.00

Panel A of Table 3 presents the regression of IC on the size and announcement variables, using the twenty-five portfolio observations. Panel B presents the same regression with the PL variable added. There exists a statistically significant association between the period of listing and the information-content variables. Thus the earnings figure of a firm that is relatively new on the NYSE possesses more information of value to investors than the earnings figures of longer listed NYSE firms, after controlling for the firm's size. Although the regression coefficients for market value and dividend announcements are in the expected directions, they are not significant.

If a firm's announcements around its EAD reveal earnings information, the information content of the earnings announcement itself will be low, and an inverse relationship between the IC and Ann variables should be detectable. Table 3, however, documents a positive relationship: according to the evidence here, the more announcements made about a firm around its EAD, the greater the information-content variable calculated at the EAD. This implies a measurement, rather than an information, interpretation. For these firms, stock price changes measured at the EAD may be due, at least in part, to announcements other than the annual earnings release made around the same time.

These findings suggest that there are information asymmetries that exist between firms that have been on the NYSE for a long period and those that are newly listed. Lev (1988) argues that reducing information asymmetries is desirable, and that accounting standard-setters should aim their policies of mandated disclosure primarily at those firms with relatively sparse information sets. One such group may be newly listed firms and encouraging disclosure from these firms might be appropriate. Yet, recent differential disclosure rules in the United States and elsewhere require, in general, more disclosure for larger firms, which would be those with relatively longer listing periods.

Another implication of these results relates to the business risk assessment by the auditor. The evidence suggests that reliance by investors on the earnings announcements of NYSE firms is greater when the firm is newly listed on that exchange. Since reliance on the data is relevant in litigation proceedings, audit risk may be higher when the auditee is newly listed.

TABLE 3

MULTIPLE REGRESSION RESULTS PORTFOLIO SAMPLE (n=25)

Panel A		Regression coefficient	*SE*	*t*-statistic (prob)
Information content on:	IC on:			
Ln size	MV	0.40	.160	.24 (.807)
Dividend/splits	DS	.423	2.616	.16 (.873)
Other announcements	Ann	-.029	1.616	-.02 (.986)

F-statistic = .10
Adj R^2 = 13%

Panel B		Regression coefficient	*SE*	*t*-statistic (prob)
Information content on:	IC on:			
Ln size	MV	-.152	.140	-1.09 (.290)
Reciprocal of period of listing	PL	4.80	1.35	3.56 (.002)
Dividend/splits	DS	.47	2.09	.22 (.824)
Other announcements	Ann	3.43	1.62	2.12 (.047)

F-statistic = 3.28
Adj R^2 = 27%

Extensions to Analysis

Additional analysis was performed to address the issues of heteroscedasticity, multicollinearity, market model estimation procedure, specification of the model and the portfolio formation technique.

Heteroscedasticity. Plots of the residual values of the full model against predicted values and against each of the four independent variables do not suggest any obvious relationships. The White (1980) test for heteroscedasticity of unknown form applied to the two variables (PL and Ann) that appear as significant factors in Table 3 does not suggest a heteroscedasticity problem (F = 1.3).

Multicollinearity. The MV and Ann variables appear (from Table 2) to be particularly vulnerable to this potential data problem. Following the approach suggested by Koutsoyiannis (1977), a step-by-step procedure, starting at elementary regressions and adding variables one by one, is performed. The results support the robustness of conclusions drawn from analysis of Table 3. The Ann variable does not appear to be acting simply as a proxy for the size variable.

Market model estimation procedure. In order to test the sensitivity of the results to the use of the two-parameter model, the analysis was repeated using the market-adjusted model described in Brown and Warner (1985), which measures abnormal return (information content) at time t as $(R_{it}-R_{mt})$. The results remain essentially unchanged from those presented in Table 3.

Specification of the model. Alternate specifications of the independent variables of size and period of listing (reciprocals, natural logs, square roots) and the dependent variable (Box-Cox transformations on IC) do not alter the main result. Further, interactive forms of the MV and PL variables do not add to the explanatory power to the model.

Portfolio formation technique. Constructing portfolios of various sizes, 16 portfolios (approximately 100 firms in each), 36 portfolios (approximately 45 firms in each), and 100 portfolios (approximately 16 firms in each), leads to essentially the same conclusions as those in Table 3, as does ranking firms on PL and then on size.

The above analysis suggests that the conclusions drawn from Table 3 are robust across a variety of methodological procedures.

CONCLUSION

This study rejects the null hypothesis that, after controlling for firm size, the information content of a firm's earnings announcement is not related to the firm's period of listing. The period of listing effect documented here is apparent using a variety of model specifications and portfolio formation techniques. The annual earnings announcement of a firm which is newly listed on the NYSE appears to contain more new information than a similar announcement from a NYSE firm with a longer listing history. This suggests that the set of predisclosure information available about a newly listed NYSE firm is not as rich as that of a more established firm. Consequently, capital market research studies ought to control not just for firm size, as suggested by a number of recent studies, but for the firms' period of listing as well. With respect to accounting standard-setters, disclosure rules aimed at more disclosure for newly listed firms may be appropriate to reduce this apparent information asymmetry. Further, auditors engaged in assessing the business risk of an audit engagement should find these results of interest, since they suggest that reliance on the earnings announcements, and consequently the auditor's loss exposure, is higher when the firm is newly listed.

The above implications must be interpreted with consideration of the limitations of the study. Expansion of the sample to include AMEX and OTC firms, including an examination of differences between the exchanges, would increase the validity of generalizations drawn from the results for consideration in policy debates. Another possible refinement of the present study would examine potential industry effects. The two factors examined here are firm-specific. Since industry is not controlled for, industry effects may be confounding the results.

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WESLEY C. SAMPSON AND MICHAEL J. OLAN

An Innovation in Auditing: Matrix Summaries of Journal Entries

The authors of this paper propose a database which summarizes journal entries in a way that can be used for audit planning and accumulating data for matrix-derived financial statements. This dedicated system provides a significant internal control procedure hitherto unavailable. In addition, this system is expected to be more practical and easier for accountants to use than mainframe database systems.

Key words: Auditing; Matrix; Accounting.

There are few, if any, formal reports drawn from the first level of accounting data, the journal. To many observers, the journal is merely a log of activity, that is, the input data from which a ledger is derived. Computer systems often relinquish the completeness and correctness of accounting matters to auditors and accounting supervisors.

Journals have been an important part of auditing because the environment of accounting — internal control — is evaluated at this point. Auditors have struggled with the need for classification of the journal. They have used procedures of 'read the journal' for manual systems and various scan and cross-reference techniques in computer systems. Informal discussions with auditors who have experience with pre-computer systems indicate that an 'inspection of data' function has been lost in the volumes of data handled by computer accounting systems. The procedure proposed in this paper would organize the function of 'read the journal'.

Previous research has suggested the possibility of using a matrix approach to reviewing transactions. Leech (1986), in his review of matrix accounting literature, suggested that databases might overcome the problems associated with recording transactions in matrix accounting systems. Mepham (1988) has also advocated the development of database systems to organize journals in matrix accounting.

The suggestion for databases stems from the question of how to accommodate the journal when working with a matrix ledger. One method is to subtract the opening trial balance from the ending trial balance to find aggregate transactions. Roughly, this is the approach followed by Mepham (1980, Chapter 14). This paper differs from Mepham's work in somewhat the same manner as the direct method of cash flow statements (totals of individual transactions) differs from the indirect method (annual charge).

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Amer, Bailey and De (1987) report that most academic thought toward accounting-oriented databases is found in the 'events accounting' approach. This approach seeks to expand the records and reports of accounting. In recent years the discussion has centred on the relational database model. However, the linked-list database which implements the design presented herein is related to the presentation by Haseman and Whinston (1976).

This paper describes a database wherein the journal entry is the canonical record, that is, the journal entry remains whole in further accounting reports.[1] A procedure which aggregates repetitious mainframe journal entries into a database of journal entry designs will enable two improvements to the database process. First, a report heretofore nonexistent in accounting, a summary of journals, can be generated. Second, the ability to search this new database is expected to add efficiency to auditing.

A matrix approach to reviewing the journal may change priorities in audit procedure. Traditional auditing logic has been to find entries by working in reverse sequence from the ledger to the journal. The use of a data structure of journal entries provides an entirely new starting point — a report of those journal entries which exist.

The ledger procedure of accounting is not, in our opinion, a summary of journal entries. It is a summary of individual lines of the journal entries irrespective of the individual entries beyond clerical accuracy. Distinctions involved in the basic classification of transactions become obscured in the normal bookkeeping process. A credit sale is not precisely the same as a cash sale, yet both are normally posted to the Sales account. A taxable sale (that is, a sale on which a sales tax is levied) is not identical to a non-taxable sale. This latter pair of transactions is expanded throughout this paper.

We have arbitrarily chosen to use the word 'design' to identify the forms of journal entries. Examples of designs for a non-taxable service sale and a taxable service sale are:

Dr Assets	500	
Cr Revenues		500

and

Dr Assets	525	
Cr Liabilities		25
Cr Revenues		500

In this database, all journal entries of a given design, that is those which contain the identical debit or credit attributes of the identical accounts, are aggregated in a record which contains totals for the dollar values of each summary entry, as well as a tally of the number of occurrences of the particular design. As will be argued below, this database summary of journal entries provides: (a) a basis for audit planning; and (b) a method to accumulate data for matrix-derived financial statements.

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[1] A computer program of prototype data storage and rudimentary search routines has been successfully tested; and the algorithm is included in a U.S. patent application.

The proposed database designed for individual accountant use would ordinarily be built from back-up files which store all transactions of general ledger software packages in general journal form. This database would be composed of totals and counts of each design of journal entry which occurred throughout the period. Use of a specialized database will provide both innovations of new audit technique and increased efficiency in existing procedures. We expect the primary users to be corporate accounting supervisors on a daily basis and auditors in a wide variety of settings.

MATRIX ACCOUNTING EXPANDED TO THE JOURNAL

Although matrices have been noted in accounting literature since Augustus De Morgan's fifth edition of *Elements of Arithmetic* (1846), their usefulness had been obscured until Mattessich (1964) integrated computer capabilities. Most discussions of the matrix have assumed existence of a conventional set of books and trial balances. Hoshimura (1988) and others have suggested a complete matrix-accounting cycle wherein compound entries are broken up into simple entries. A number of advocates of matrix methods appear to rely on the use of the two dimensions of a matrix for representing the debit and credit of bookkeeping.[2] Auditors, however, need to trace the original transaction to its reasons for recording. This paper has its origin in the work of Mattessich, but begins a new approach, aggregation of detail of the designs of journal entries with emphasis upon audit. To perform the trace, specific transactions need to be preserved.

First, we have chosen the journal entry as the canonical record. Journal entries occur in varying sizes and require variable-length records. The following discussion, along with Figures 1, 2 and 3, illustrates the problem and presents some solutions to matrix classification of journal entries.

In Figure 1 we have compressed the budget model of the firm (from Mattesich, 1964) into the five major classifications of accounts. All account titles appear along both dimensions of the matrix. A $500 sale of service, debit Asset and credit Revenue would appear, as in Figure 1.

The matrix approach illustrated in Figure 1 is envisioned to contain a master or total journal entry for each design. All entries which debited Assets and credited Revenues would be added to the master which is schematically found at the intersection of Assets (Dr) and Revenues (Cr).

The journal detail of bookkeeping does not match the logic of a two-dimension matrix. Compound journal entries, those which contain more than two elements, far outnumber simple entries; and they cannot be expressed in a two-dimension summary. One can assign multiple debits and credits within a two-dimension matrix (through clearing accounts, for instance), but the transaction then becomes awkward

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[2] The work with two-dimension matrices appears to be allegorical to the periodic approach to inventory — one arrives at useful values through subtraction. However, the aggregation of transactions, perhaps allegorical to perpetual inventory, requires multi-dimensional matrices.

Figure 1

TWO-DIMENSION ACCOUNTING MATRIX

(Condensed from Mattesich, 1964)

debits \ credits	A	L	O	R	E
Assets				500	
Liabilities					
Ownership					
Revenues					
Expenses					

to identify and audit. The aggregation of journal detail requires multi-dimension matrices.[3]

Consider an entry to cash, sales and sales tax payable which occupies one cell of a three-dimension matrix. Not only is a three-dimension matrix needed, but provision must also be made for debit and credit within each account. The problem becomes more complex with larger entries.

One component of the solution is to modify account numbers within the computer to adjust for the debit and credit sections of each ledger account. In other words, the chart of accounts is internally doubled to provide separate accounts for the debit and credit components of each account. This adaptation of double-entry is transparent to the accountant and allows the data structure to classify unique, rather than paired, information for each account. Although the matrix is theoretically larger, each design occurrence of a journal entry is then unique.

Potentially, the matrix shown in Figure 2 could hold up to 1,000 values. In general, an n-account journal entry will require an n-dimension matrix with up to $(2 \times \text{number of accounts in the ledger})^n$ values stored. However, there are usually relatively few journal entry designs occurring in any given matrix. This allows use of a series of sparse matrices, which require space to be allocated for only those journal-entry designs which actually exist. Each size of journal entry — that is, two-account, three-account, four-account, etc. — requires a separate matrix. An example of a three-dimension matrix which uniquely classifies the taxable sale discussed above is shown in Figure 2. The first element, a debit to cash, is classified in the Y axis, the credit to sales is shown on the X axis, and the sales tax payable credit appears on the Z axis.

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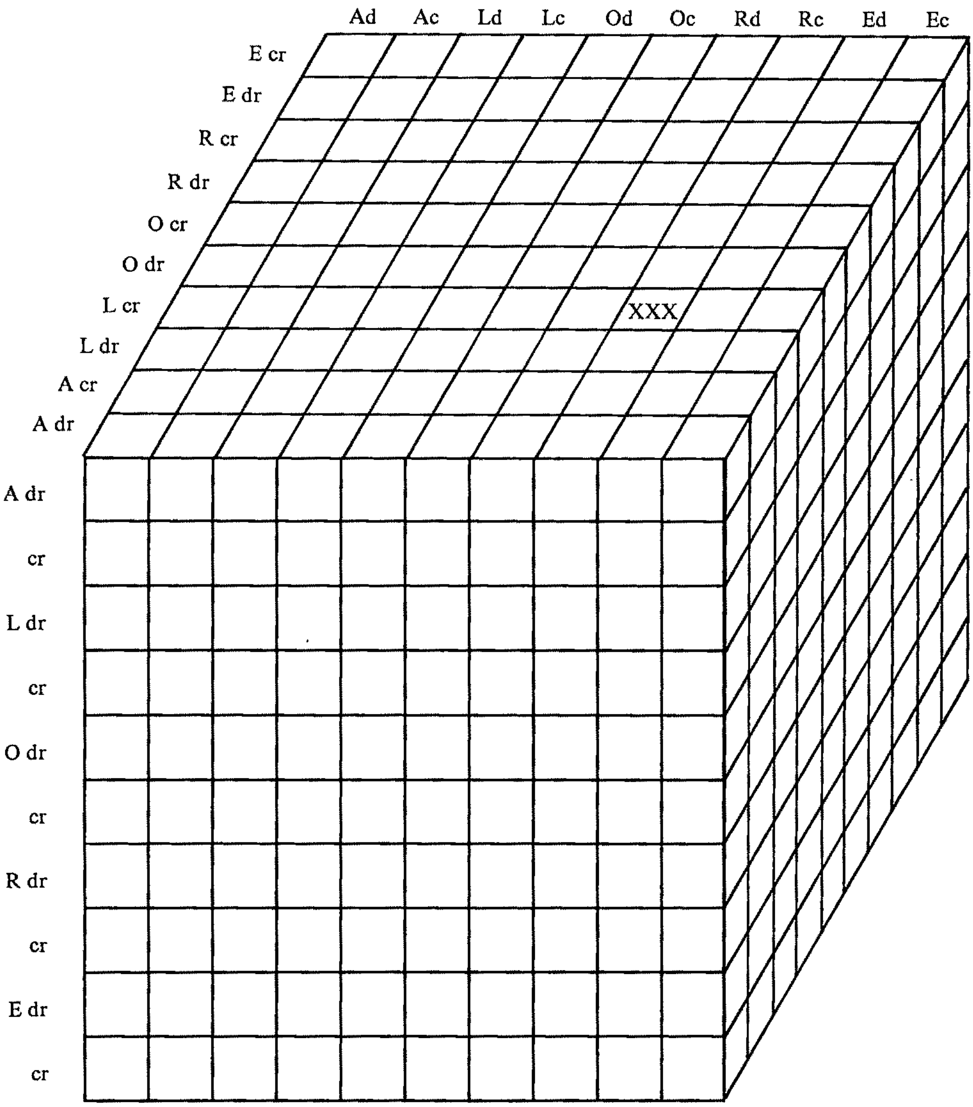
[3] Multi-dimensional matrices are not intended to be related to multi-dimensional accounting, as discussed in Ijiri and Kelly (1980).

FIGURE 2

EXPANDED THREE-DIMENSION ACCOUNTING MATRIX



The matrix-construction process is: (a) read a journal entry from the back-up file; (b) determine the size of the journal entry in terms of number of accounts posted; (c) add the entry being read to totals for that design; and (d) record the entry number in a chain for each design occurrence. The result is a total of dollars for each account and pointers to audit detail for each unique design of journal entry.

Although the stored journal entry summaries are abstractly described as cells of multi-dimension matrices, each matrix is implemented as a sequence of records. Indices constructed from this structure provide speedy retrieval. Figure 3 displays the organization of summaries of journal entries in the database.

FIGURE 3

JOURNAL SUMMARY DATA STRUCTURE SCHEMA

acct	acct	$$	$$	N	P
acct	acct	$$	$$	N	P
acct	acct	$$	$$	N	P

acct	acct	acct	$$	$$	$$	N	P
acct	acct	acct	$$	$$	$$	N	P
acct	acct	acct	$$	$$	$$	N	P
acct	acct	acct	$$	$$	$$	N	P

acct	acct	acct	acct	$$	$$	$$	$$	N	P
acct	acct	acct	acct	$$	$$	$$	$$	N	P

acct = account number modified by debit or credit;
$$ = the total dollars to the corresponding account accumulated from all entries of identical design;
N = number of journal entries of each design; and
P = pointer to records of journal entry detail.

The complete journal detail of smaller firms can be stored for retrieval of detail. At some point, the volume of journal data of larger companies will require that only the entry identification numbers may be available for retrieval. In those larger firms, a search of files of the mainframe computer is required to retrieve details of entries.

ANALYTICAL REVIEW OF INTERNAL CONTROL

We believe the Figure 3 classification of journal entries to be a new procedure in accounting. Its utility is expected to be in audit planning and internal control evaluation. The following aspects of auditing will be improved through use of a report of all journal entry designs: (a) search for exceptional entries; (b) search for exceptional dollar amounts; and (c) evaluation of departmental controls.

Concentration on those entries which occur only a small number of times provides for accounting data management by exception. Once the designs of few occurrences are identified, the supervisor or auditor has indications of where exceptions may exist. Conversely, exact counts of frequent transactions guide the statistical sampling to be directed to a specific purpose.

Exceptional entries may be collected by number of occurrences or by searches for specific entry design. One can ask such questions as 'What entries occurred once?' The user can search questionable entries based on prior experience or the user can 'sweep' groups of consecutive accounts for entries which contain credits to a range of accounts and debits to another range. The search for unlikely combinations aids the evaluation of internal control. Unlikely combinations may indicate possible management overrides of internal control. In 45 per cent of the recent cases studied by the National Commission on Fraudulent Financial Reporting (1987, p. 112), management overrides of internal control appeared to be present.

The exceptional dollar-amount search helps find estimates to be audited. Queries such as 'What entry summaries have all dollar amounts evenly divisible by x?' will find round-number journal entries. Round number entries are possibly estimates, and U.S. auditors are required to audit accounting estimates. This proposed analysis of the journal for unusual entries adds a degree of analytical review to the study of internal control which was previously unavailable.

Logically, similar journal entries should arise from similar departments. A classification scheme of journal entries allows a supervisor or an auditor to inspect this condition after the fact. The query, 'What are the entries which affect this group of accounts?' allows one to gather all recorded accounting entries created by a department. The summary of journal entries provides another benchmark by which to study the company's internal control.

Traditional audit of internal control matches postings to given accounts with source documents. The emphasis upon known dollar totals and counts of journal entries of a given transaction type and/or department allows better planning for examination of the underlying documents or computer-generated entries. Tests may be made on the basis of entry design more than on the basis of posting to a particular account.

DATABASE AIDS TO AUDIT EFFICIENCY

Databases on mainframe systems are currently available to auditors. There is frequent continuing education on how auditors may access these databases through telecommunications, work stations and mainframe terminals. We speculate that an independent microcomputer database based on the accountancy discipline would be easier to operate.

An auditor is interested in related accounts and related transactions. The 'other end' of the journal entry is available with every view of a journal database. This allows the auditor to expand a search at any time. A traditional ledger search can be inefficient on two counts: first, some ledger postings are highly repetitious; second, once a posting is found, the 'other end' of the transaction needs to be identified to complete the analysis. A database composed of data structures as diagrammed in Figure 3 simplifies the search process.

Searches in general are expected to be more efficient in the proposed database of design summaries because the quick selection of designs leads to lists of specific entries. There is no idle reading of intervening records. The single pass of the original file results in reorganization by index and list. The database is so linked that the journal appears to be sorted. The chain of pointers initiated with the summary record illustrated in Figure 3 provides the user with the identical entries which would be available after a sort.

Searching two accounts at the same time is a rapid search once the entries have been summarized. One may ask in the database design proposed above, 'Are there any entries which affect these two accounts and some others?' The search for variations beyond two (or more) accounts fits traditional audit practice. For example, auditors examine repairs and equipment additions concurrently.

The general ledger is ordinarily the first file constructed from the journal. One can indirectly recreate the journal through subtraction of successive ledgers, in a manner similar to the workpaper for cash flow statements.

Reports which are based on transactions, such as the direct method of presenting cash flows, appear to lend themselves to data prepared directly from journal entries.

CONCLUSIONS

A new auditing concept, a summary of journal entries, offers opportunities in auditing and accounting supervision. In addition, the data model based upon journal entries serves as a possible technique to bring further feasibility to matrix accounting.

An effective manual audit or supervisory procedure, 'read the journal', can be restored and improved via a microcomputer database. This classification and summary of journal entry designs into a specialized database restores a classical tool to the auditor and enables audit searches independent of the mainframe computer. Analytic review of internal control and improved selection of transactions for testing can be expected from a classification of the journal.

Previous research has indicated that aggregation of detail has been a barrier to development of matrix accounting systems. The multi-dimension matrix of totals of journal-entry designs should aid developers of matrix accounting. An additional benefit of a journal entry database may be found in research on matrix methods.

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CHRISTOPHER NOBES

A Political History of Goodwill in the U.K.: An Illustration of Cyclical Standard Setting

A cyclical pattern of standard setting has been suggested elsewhere. In this context, this paper constitutes a case study of U.K. standard setting on the subject of goodwill. It is noted that varied practice of the 1960s was followed by several stimuli for action by standard setters. Managers opposed standardization and income reductions, whereas senior policy-makers, government, press and international influences proposed it. The result is dramatic swings in the content of documents on goodwill from the Accounting Standards Committee, possibly contributing to the latter's demise.

Key words: Accounting standards; Goodwill; Cycles.

Nobes (1991) suggests that a cyclical pattern can be observed in the degree of standardizaton proposed in documents published on several topics by the U.K.'s Accounting Standards Committee (ASC), which operated from 1969 to 1990. This thesis has been commented on by Skerratt and Whittington (1992) and Nobes (1992). The present paper analyses the goodwill case, which was by far the most controversial issue facing the ASC after the decline in interest in inflation accounting in the early 1980s.

After setting out in some detail the ASC's handling of goodwill, the paper: (a) identifies the parties involved in the politics of standard setting on this subject, and tries to explain their behaviour; and (b) uses this as an illustration of the cyclical model. It may be useful at this point to note an outline of these two matters. The interested parties to look out for as the history progresses are corporate managers, audit firms, users of accounts, government and international influences. I have previously described the cyclical model (Nobes, 1991, p. 270) as having four elements: (a) the start point of varied practice; (b) the energy inputs from time to time to cause attention to be given to the topic; (c) forces opposing standardization; and (d) forces pressing for standardization. Figure 1 illustrates the cycle that emerges.[1]

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[1] As Nobes (1991, p. 265) notes: 'Obviously, as in any social or biological system, the cycles are less precise than those observed in physics. Also, it is not intended that the word "cycle" should imply self-sustainment or distinct regularity . . . but merely "a recurrent round or course of successive events, phenomena, etc." (Oxford English Dictionary)'.

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The author is grateful for information from Paul Rutteman (Ernst & Young), Ken Wild (Touche Ross) and Peter Holgate (Coopers & Lybrand). The latter two were secretaries from time to time of the ASC's goodwill working party. He is also grateful for comments on this paper from Jill McKinnon (Macquarie University), R. H. Parker (University of Exeter), Alan Roberts (University of Reading), David Tweedie (Accounting Standards Board) and two referees.

It records, over time, the degree of standardization that would be required by the ASC's documents. This will be examined further later.

The calculation and subsequent treatment of goodwill can be carried out according to several different methods. For example, in the European Community's (EC's) Seventh Directive there are two distinct methods allowed for calculation and, independently of this, two for subsequent treatment. German practice, for example, was until recently different from any of these. These points are illustrated in Appendix I, which constitutes an international comparison of goodwill rules. By the start of the history reported here, goodwill in Britain was being calculated at the date of acquisition of a subsidiary, and by reference to the fair values of its net assets. However, the treatment of goodwill after acquisition varied greatly.

A further point of introduction relates to the status of U.K. exposure drafts (EDs) and standards (SSAPs) during the ASC's life. EDs were issued on the authority of the ASC itself but were not intended to be binding on companies or auditors. Nevertheless, practice was affected to the extent that an ED was regarded as an indication of 'best practice' or a prediction of an eventual standard. SSAPs were prepared by the ASC but issued on the authority of the councils of the six chartered accountancy bodies in the U.K. and Ireland, who required their members to observe standards in the preparation and audit of financial statements intended to give a true and fair view. In effect this meant that auditors were the enforcement mechanism for SSAPs: qualified audit reports resulted from material departures from SSAPs, except where the latter were deemed necessary in order to give a true and fair view. The Companies Acts made no mention of accounting standards until the Companies Act 1989, which did not apply to financial statements issued in the ASC's lifetime.

Thus, SSAPs had a relatively weak enforcement status, and the ASC always risked collapse of its authority if companies chose to disregard an unpopular standard. Further, interested parties could lobby both the ASC and the accountancy bodies. Of course, less directly, the government could also be lobbied in the hope of precipitating pressure on the ASC. The ASC at its close had twenty-one part-time unpaid members. Most of these were qualified accountants who were either directors of large companies or partners in large audit firms (see Appendix II). Thus, many of the individual members of the ASC were in a poor position to resist lobbying because they were generally full-time employees of, or colleagues of, or providers of services to, interested parties.

THE 1970s

Lee (1971, 1973, 1974) examines British practices in the 1960s and early 1970s, noting great variety in the treatment of goodwill (see Table 1). This period is the starting point for the standardization cycle. It is suggested here that the reason for varied choice of practices is that different managers face different circumstances: size of reserves, amounts of goodwill, level of earnings, vulnerability to take-over, etc. Consequently, various practices will be suitable to different managers as they try to present their accounting results as favourably as possible. It is assumed here that managers will generally wish to maximize reported earnings and reported return on assets because of the favourable effects that they perceive this will have on the share price and on their compensation and reputation (e.g., Watts and Zimmerman, 1978). This motivation would lead to a dislike of goodwill amortization charges, and a willingness to reduce net assets. These attitudes might be tempered where there were insufficient reserves to achieve write-offs or where net assets were reduced in such a way that the accounts looked too weak or that gearing ratios were so high as to endanger covenants or to cause embarrassment when raising finance.

Holgate (1989, Ch. 2) records that the ASC was spurred into action on goodwill by the diversity of practices and by the publication of drafts of the EC Fourth Directive. U.S. rules already required capitalization and amortization of goodwill (ARB 24 of 1944, and APB Opinion 17 of 1970; see Zeff, 1972). The ASC set up a sub-committee in 1974 which was soon split into two working parties: one recommended immediate write-off to reserves, the other amortization over 40 years.[2] The topic was dropped in the mid-1970s as the ASC began to concentrate on inflation accounting.

THE 1980s

By the beginning of the 1980s, practice in the U.K. was still varied: some companies carried permanent goodwill, others amortized, most wrote goodwill off against reserves (see Table 2). The ASC's first published document on goodwill was issued in June 1980 as *Accounting for Goodwill: A Discussion Paper.* By then, the EC's Fourth Directive had been adopted (in 1978) and the International Accounting Standards Committee (IASC) was preparing an exposure draft. The directive related only to individual companies, not to groups, and it required purchased goodwill to be amortized over a five-year period or longer useful life. Nevertheless, there was a stimulus for action because the profession needed to come to a view about how to advise the Department of Trade and Industry (DTI) on implementation of the Fourth Directive and on negotiating in Brussels on the Seventh, which *would* cover goodwill on consolidation.

The 1980 Discussion Paper (see Appendix II for working party members) specifically mentioned the forthcoming implementation of the Fourth Directive (as the Companies Act 1981, as it turned out); and the draft Seventh Directive which did not overtly contain an option to allow immediate write off to reserves. The paper examined various methods of goodwill accounting, and favoured a standard practice of capitalization followed by amortization through the profit and loss account. That is, an American-type solution was suggested, including a maximum of forty years for amortization.

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[2] The recommendations were not published, but Holgate (1989), who was a member of the Secretariat of the ASC, records the history.

TABLE 1

GOODWILL PRACTICES (OF 66 U.K. COMPANIES)

	1969, %	1971, %
Shown as fixed asset [a]	15	14
Shown as neither fixed nor current [a]	29	32
Shown as deduction from reserves	9	9
Shown as a reserve	11	8
Written off from reserves	62	58
Companies with two treatments in one year	(26)	(21)
	100	100

[a] Amortization of these assets seemed to be practice for 14% of these companies in 1969 and 17% in 1971.

Source: Adapted from Lee (1973), Appendix 4.

TABLE 2

GOODWILL PRACTICES (OF 300 U.K. COMPANIES)

	1978–9	1979–80	1980–1	1988–9
Shown at cost	77	43	29	6
Amortized	29	46	30	9
Written off immediatley	125	157	195	213
	231	246	254	228
No policy evident or no goodwill	69	54	46	72
	300	300	300	300

Sources: *Survey of Published Accounts, 1981–82*, ICAEW; and deduced from *Financial Reporting, 1989–90*, ICAEW.

Although there was some support for this conclusion from commentators, the majority of them believed that: 'goodwill was not like other assets in that it could not be separately realised and that continued recognition of expenditure on purchased goodwill was of no value to users of accounts' (ED 30, Preface, para. 1.2). (There are full references to relevant EDs and SSAPs in Appendix III.) This view of the nature of an asset has apparently since been abandoned in the U.K. (see later). However, given that majority practice and majority argument favoured immediate write off to reserves, the ASC did not try to ban this. Thus, in ED 30 of 1982, both immediate reserve write off and amortization (over up to twenty years) were allowed.

The alternative idea of banning capitalization was not taken up, presumably because this would have been difficult for international companies and those with inadequate reserves. The ASC sat on the fence, noting weakly that: 'a single accounting treatment for purchased goodwill could only be laid down as standard if that treatment could be justified by sound argument, and, further, if sound argument could be advanced against the alternative treatments' (ED 30, Preface, para. 1.3).

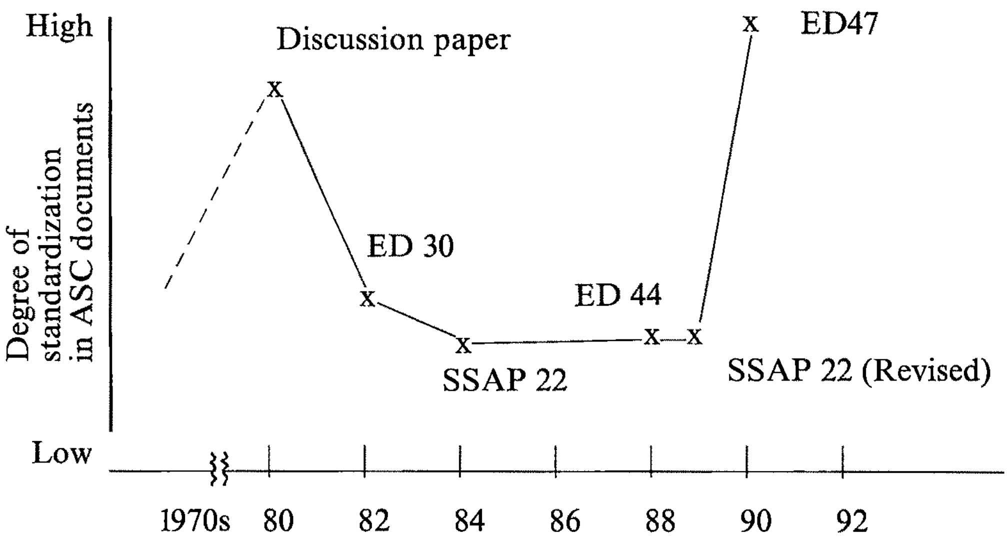
Of course, the discussion paper *had claimed* to make the necessary sound arguments; and the ASC's objectives *included* that it should try to narrow the variations in accounting practices even if a whole range was acceptable in principle. This failure of nerve was typical of the actions of the ASC; the establishment of options was repeated in many other cases where there were no similar options in U.S. accounting (e.g., SSAPs 4, 13, 20, 23, 24; and ED 51).

Several examples of weakness on the part of the ASC have already been alleged above, and more follow in this section. These are illustrations of the discussion in the introductory section about the authority of the ASC and the status of standards. The ASC would not wish to attract criticism from management or auditors, nor to risk difficulties in acceptance of a standard by the councils of the accountancy bodies (whose members are largely senior directors and auditors), nor could it afford the issue of a standard which substantial numbers of companies would break. By contrast, the greater authority and independence of U.S. and Australian standard setters (e.g., Parker, 1991) has enabled the survival of apparently tighter standards, including those on goodwill mentioned elsewhere in this paper.

Knowing that the U.K. was following the line in ED 30, the IASC had to withdraw from the largely amortization route preferred by E 22 (1981) and move to the position in IAS 22 of allowing the options as in the U.K. Nevertheless, it later sought to remove the write-off option by means of E 32 (as discussed later).

SSAP 22 (of 1984) was prepared by the same ASC working party as had prepared ED 30 (see Appendix II). The public response to ED 30, examined by Holgate (1983), indicates support for each of immediate write off, amortization and a choice

FIGURE 1
AN IMPRESSION OF THE GOODWILL CYCLE



between them. Thus, SSAP 22 continued to take the politically expedient route of allowing two widely different practices. However, it modified this by stating that purchased goodwill: 'Should normally be eliminated from the accounts immediately on acquisition against reserves' (para. 39). Members of the ASC may have felt guilty about allowing the option, and sought absolution through the ineffectual statement 'Should normally', which was merely a reflection of what companies *did* normally (see Table 2). No criteria were offered concerning the circumstances that would lead a case to be abnormal, so the whims of directors possibly would suffice. A further change from ED 30 was that, in response to some criticism of the twenty-year amortization period, a time limit was not included in SSAP 22.

Also, at least ED 30 had sought to control the use of both methods *by the same company*: 'Once a company has selected either ... method, it should apply it consistently to ... all acquisitions. This is because the choice is essentially between two mutually exclusive ways of looking at the meaning and accounting relevance of all goodwill arising on acquisitions' (para. 27). In SSAP 22, the ASC felt it necessary overtly to retreat even from this: 'Nothing in this standard precludes a company from using both the immediate write-off treatment and the amortisation treatment in respect of the goodwill which relates to different acquisitions' (para. 42). Thus, the choice of method seems not to depend upon the circumstances of the parent or the subsidiary, but (in the case of ED 30) on the minds of the directors, who (under SSAP 22) are allowed to be schizophrenic. One commentator has suggested that the ASC might as well have gone the whole hog by allowing an acquisition to be treated partly by immediate write off and partly by amortization (Boyle, 1985).

Practice after SSAP 22 was almost universally to adopt its preferred method of immediate write off (see Table 2). This British position of allowing a choice between amortization and immediate write off was enshrined in the Seventh Directive (Article 30), with the amortization period being that required by the Fourth Directive (Article 37): 'maximum period of five years' except that 'Member States may, however, permit companies to write goodwill off systematically over a limited period exceeding five years provided that this period does not exceed the useful economic life of the asset'. This flexibility was implemented in the U.K. in the Companies Act 1989, which applies the 1985 Act's goodwill rules to goodwill on consolidation.

THE BACKGROUND TO ED 47

Although SSAP 22 had been issued as recently as December 1984 (in force for accounting years beginning on or after 1 January 1985), by the end of the 1980s there were obviously severe problems with it. Holgate (1989, p. 4) records some of the criticisms. Singleton-Green (1990) even suggests that the publication of SSAP 22 was 'the beginning of the end for ASC'. These problems, and other background issues, are now examined under six headings.

Hole in the Balance Sheet

The most obvious problem was the 'hole in the balance sheet'. The less extreme form of this was the frequent occurrence of groups where the net assets of the group were lower than the net assets of the parent (e.g., Marks and Spencer's 1989 accounts). This nonsense may be simple enough for an accountant to live with, but its counter-intuitive nature might suggest, even to sophisticated non-accountants, that something was wrong with conventional accounting measurements. In some cases the hole was visible in the form of a negative reserve (e.g., Guinness' 1988 accounts).

The more extreme form of this problem was the creation of negative net assets for a group when very large goodwill items were written off (e.g., WPP's 1987 accounts). Again, this is counter-intuitive and leads to bizarre profitability and gearing calculations.

The presentational effects may be serious enough for management to wish to ameliorate them, particularly when trying to raise capital or when under threat of takeover. Further, the effects can be more serious than simply the appearance of the balance sheet, in the sense that debt covenants or Stock Exchange rules may be tied to gearing ratios or to equity figures. For these reasons, some managements have attempted to plug the hole in the balance sheet by the capitalization of both purchased and created brand names. The British Companies Act 1985 (Sch. 4, Format note 2) seems to allow these to be capitalized; and (in Sch. 4, paras 17 and 31, 1) to be valued at purchase price, historical production cost or current cost. Until 1989 (TR 738) the U.K. lacked authoritative guidance on brands, and, until 1990 (ED 52), any exposure draft. Thus, directors of companies felt able to capitalize either created or purchased brand names, sometimes transforming their balance sheets (e.g., Reed International's 1989 accounts or WPP's 1988 accounts). Furthermore, unlike goodwill, in the absence of any accounting standard, there appeared little clear instruction to amortize the capitalized brand names. To the extent that this procedure amounted to relabelling goodwill as something subject to less control, and because the valuation of brands seemed highly speculative, brand capitalization was regarded by many as an abuse and as an area needing control (e.g., Barwise, Higson, Likierman and Marsh, 1989).

The Size of Goodwill

The degree of controversy surrounding goodwill is presumably related to the quantities of goodwill that directors have to deal with. In the late 1980s, these quantities grew because of increased takeover and merger activity in a buoyant economy (Barwise *et al.*, 1989) and because of the increase in the average size of goodwill, especially in the case of service companies. On the latter point, Higson (1990) reports that the average ratio of goodwill to a bidder's net worth was around 3 per cent from 1976 to 1983 but over 40 per cent from 1984 to 1987. This was largely due to the increase in share prices.

Which Reserves?

A technical aspect of this problem concerned which reserves could be used for the write off. At first sight, the initial question relates to whether distributable or undistributable reserves should be used. However, for goodwill on consolidation, it turns out to be a red herring because there is no such thing as distributable profits of a group. More usefully, it is possible to ask whether the reserves used should be realized or unrealized. Guidance is lacking on this matter in SSAP 22 or the 1989 Act, although conventional accounting logic suggests that unrealized reserves should be used intially,[3] with a gradual using up of realized reserves over the life of the goodwill.

In practice, directors have sought to use up unrealized reserves first, in particular the share premium account and the revaluation reserve. (For this and other points, examples are given in Jameson, 1988, and Griffiths, 1987).

1. *Share premium.* The basic rule in the 1985 Act (S. 130) and its predecessors is that the share premium account cannot be used for the purpose of write-off. However, with the permission of the court, goodwill may be so written off. Permission was sought by, and granted to, several companies (e.g., WPP's 1987 accounts and Saatchi and Saatchi's 1985 accounts).
2. *Revaluation reserve.* There seems no logic in writing off goodwill against a revaluation reserve, which would often have been created from revaluations unconnected to the goodwill. The reserve would be needed to be turned into realized reserves, whether through the profit and loss account or not, when the assets were sold. Indeed the EC's Fourth Directive (Article 33, 2) imposes a ban on this:

   > (b) The revaluation reserve may be capitalised...
   > (c) The revaluation reserve must be reduced to the extent that the amounts transferred thereto are no longer necessary for the implementation of the valuation method used...
   > (d) Save as provided under (b) and (c) and revaluation reserve may not be reduced.

   Unfortunately, the British implementation of this in the Companies Act 1981 was unclear, in that item (d) above was omitted. Consequently, companies were able to use revaluation reserves for write-off purposes (e.g., Grand Metropolitan, 1987 accounts). The DTI did not admit that the Act meant something different from the Directive (DTI, 1986), but this seems disingenuous, and they did propose an amendment. As a result, the Companies Act 1989 amended the 1985 Act (Sch. 4, para. 34) to take account of (b) and (d) of Article 33, 2 as quoted above.

Merger Relief

A further avenue for mitigating the effects of goodwill was to use 'merger relief', as originally granted by the Companies Act 1981. The original purpose of this was to enable merger accounting in the group accounts by exempting parent companies from the need to create a share premium account when issuing shares under certain conditions.

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[3] By 'conventional accounting logic' is meant argument based on double entry principles, the matching convention, articulation of balance sheet and profit and loss account, 'true and fair', etc.

When merger relief and merger accounting are adopted, goodwill on consolidation is inapplicable, although a merger reserve may arise. This largely solves the difficulties attendant upon goodwill, but could only be used under the bizarre rules of SSAP 23, as approximately copied by the Seventh Directive and the Companies Act 1989. It was relatively easy to ensure that an acquisition could be accounted for as a merger by using devices such as vendor placing (Cooke, 1985; Stacy, 1985). A further twist was the taking of merger relief without the subsequent use of merger accounting. This does not do away with goodwill, but makes it smaller or negative. ED 48 (of 1990) would remove most of these loopholes.

According to Higson (1990), a majority of business combinations in the late 1980s used acquisition accounting, but most of these also used merger relief. Of Higson's sample, only 16 per cent of combinations used merger accounting although more than three times as many appeared to meet SSAP 23's criteria, and many more could have contrived to do so. Merger accounting was found more often when the target was more profitable than the bidder (under merger accounting, the group's earnings will include all the target's profits in the year of acquisition) and when the target was large in the context of the bidder. Presumably, those groups that did not use merger accounting either were unaware of its advantages; or saw no problem with goodwill in their circumstances, given that merger relief and goodwill write-offs were allowed; or found useful the flexibility of acquisition accounting in that the 'fair value' exercise can enable write-downs or provisions that can enhance profits later.

Conceptual Frameworks

Further background of the late 1980s to the goodwill discussion was provided by the *Solomons Report* (1989); *Making Corporate Reports Valuable* (ICAS, 1988) and the IASC's *Framework* (IASC, 1988).

Solomons (1989) believes that goodwill does fit the criteria for an asset (p. 21). However, he suggests that the value attached to goodwill is merely a difference between two other numbers and would not have been the same to all prospective buyers (p. 68). Surely, on the latter point, it is also the case for other assets that different prospective buyers would value them differently? This does not affect the reliability of measurement of cost to the actual buyer. Solomons concludes (p. 22), like SSAP 22, that, in order to be consistent with the treatment of non-purchased goodwill, purchased goodwill should not be recorded as an asset. Of course, even greater consistency would be obtained if the whole amount were immediately charged to the profit and loss account rather than being deducted from reserves. Solomons does not address the resulting problems mentioned earlier in this section.

By contrast, *Making Corporate Reports Valuable* (ICAS, 1988, para. 5.25) concludes that goodwill should not be written off unless its value has been lost. Unlike Solomons, there is no reasoned argument for this conclusion, and it is not clear how the idea fits with the document's preference for valuation of assets at net realisable values. Chambers (1966, p. 218), for example, would omit goodwill on the grounds that it did not have a severable net realizable value (current cash equivalent); and he would not have to deal with goodwill on consolidation because he considers conventional consolidated accounts to be based on a fiction caused by adherence to 'substance over form' (Chambers, 1973, p. 225).[4]

The IASC's *Framework* (1988) did not specifically consider goodwill, but the *Framework*'s criteria for assets and their recognition are mentioned in the next section.

Australian Reaction

A further piece of background that could have prepared the ASC for the degree of corporate outcry against ED 47 was the effect of the approval of the mandatory standard on goodwill, ASRB 1013, in Australia in 1988. Like the earlier professional standard (AAS 18), ASRB 1013 imposed a maximum twenty years write-off period (see Appendix I).[5] This was not previous majority practice (Kirkness, 1987) and the move was met with 'universal condemnation of the standard from business people' (Chanticleer, 1989), followed by a request from the two Australian accountancy bodies to re-examine the standard.

EXPOSURE DRAFT 47

In 1988 a working party of the ASC was set up to consider amendments to SSAP 22, in the light of the above problems (see Appendix II for working party members). The arguments involved and the conclusions are examined here under seven headings.

An Asset?

After discussions over many months, it was concluded that purchased goodwill satisfied the criteria of an asset, as for example in ED 42 (para. 14), ED 49 (para. 12) or the IASC's *Framework*; that is: (a) control of resource; (b) past event or transaction; and (c) future economic benefits. Further, the recognition criteria are satisfied, as in ED 42 (para. 32), ED 49 (para. 26) or the IASC's *Framework* (para. 89): (a) it is probable that benefits will flow; and (b) cost or value is measurable reliably. Non-purchased goodwill was held not to satisfy the second recognition criterion, so it should not be recognized as an asset. It should be noted that separability is not a criterion regarded as relevant in these documents.

Amortization

Goodwill might be seen as representing the otherwise inseparable assets such as brand names, customer loyalty, trained staff and skilled management. The elements of these that were bought at the date of acquisition of the subsidiary could be seen as subject to wearing out, in the same way as the buildings and machines of the subsidiary. The latter are repaired, maintained and replaced but still depreciated. The new goodwill created subsequent to acquisition is, of course, non-purchased goodwill and, therefore, conventionally uncapitalized just as is that of the parent.

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[4] His suggested alternative is to provide a supplementary abstract of the aggregate of assets and liabilities of subsidiaries, under the same categories as they appear in the holding company's accounts.

[5] Professional standards were not binding on Australian companies and there was greater non-compliance than in the U.K. Approved standards are, however, now given statutory backing.

It would not be possible to argue that goodwill should not be depreciated on the same grounds used for investment properties in SSAP 19. That argument rests on the idea that investment properties are held for value, are separable and might be sold at any time. None of these criteria usually apply to goodwill. However, it might be possible to use the arguments used in the U.K. for not depreciating other properties, and this is discussed below under 'The Reaction to ED 47'.

Over what period does goodwill depreciate? The drafters of ED 47 considered that it would be difficult to identify the elements of goodwill and to estimate the lives of those elements. Similarly, it would therefore be difficult to assess the value of goodwill at each year end. Thus, for goodwill more so than for other assets, a systematic depreciation over a plausible period would be more practical and would lead to greater standardization. In general, and on average, customers, staff, etc. might be thought to change over a period of twenty years. This arbitrary period was chosen, consistent with the Australian and IASC rules. However, if directors could explain why a longer period was necessary, a maximum of forty years was to be allowed, consistent with U.S. rules.

The location of the debit was also an issue to be addressed. At least in conventional accounting logic, it is obvious that an amortization charge should not go to reserves but should go through the profit and loss account, and as an ordinary above-the-line charge. Of course there are arguments against the arbitrary and uninformative nature of any depreciation charges (Thomas, e.g., 1969), but goodwill does not seem to be a particularly special case. It was argued that analysts would just add amortization back to profit. Of course, many do this for other depreciation charges, which merely argues for clear disclosure of the amortization charge. ED 47's information would be more complete and detailed than that provided by immediate write-off, where the record of the original cost would not be disclosed.

Accountability

It was argued (e.g., the Appendix to ED 47) that the disclosure of goodwill as an asset, the inclusion of it in net assets and profitability calculations, and the clear amortization charges for it would lead to better accountability. This would bring about a more 'level playing field' compared for example to U.S. multinationals, who complained that they had to suffer goodwill amortization charges after acquisitions whereas U.K. multinationals did not. Although the directors of U.K. multinationals apparently valued the advantages of the unlevel playing field, it is not at all clear that this was an advantage to the shareholders and other users of accounts of those companies. That is, the directors of U.K. companies could pay too much for a subsidiary without ever suffering an earnings reduction due to goodwill amortization; and it would be easier to appear to make a good return on assets because goodwill was not disclosed as an asset and its write-off would have caused a reduction in net assets. So perhaps U.K. directors were buying too many companies and without sufficient accountability.

Harmonization

As mentioned above, ED 47 would bring the U.K. into line with most of the rest of the Anglo-Saxon world, and with predominant continental European practice (Brunovs and Kirsch, 1991). However, the British deduction-from-reserves approach had been allowed in most European countries (see Appendix I, Table A4), in some cases because of pressure from companies not wishing to be put at what might appear to be an international disadvantage compared to the U.K.[6] Nevertheless, the U.K. accountancy bodies had been asked by the IASC to address this issue on which the U.K. was seriously out of line, so that the programme (in E 32) of reducing options in international standards could progress. (In the event, it has progressed without the U.K.; see E45 of 1992.)

None of this should be taken to mean that ED 47 was caused mainly by international pressures. These were not uppermost in the minds of the drafters of ED 47,[7] but there was this incidental advantage to the proposals.

Legality

As mentioned in an earlier section, the Companies Act 1985 was interpreted to mean that goodwill could be deducted immediately from reserves, although this is not clear from the Fourth Directive. By contrast the Seventh Directive, based substantially on British practice, does clearly allow such a write-off (Article 30). No change to British law was required except that the Companies Act 1989 inserted Schedule 4A into the 1985 Act, which applied the existing rules of Schedule 4 to group accounts.

However, deduction from reserves can only apply when goodwill is not 'treated as an asset' (Sch. 4, para. 21, 1). Therefore, the capitalization of goodwill causes the rest of para. 21, as follows, to become relevant:

> (2) Subject to sub-paragraph (3) below, the amount of the consideration for any goodwill acquired by a company shall be reduced by provisions for depreciation calculated to write off that amount systematically over a period chosen by the directors of the company.
> (3) The period chosen shall not exceed the useful economic life of the goodwill in question.

It seems obvious that this demands normal depreciation charges, and legal counsel has confirmed to the ASC that the life could not be taken to be infinite. However, 'normal, systematic' depreciation would include the usage method in the case of machines, whereby annual depreciation varies in accordance with the amount of use in the year. This may suggest that amortization of goodwill could be legal if based on an impairment criterion.

The ASC's Decision

Goodwill had been discussed in a preliminary way by the ASC on at least three occasions in 1988 and 1989. The above arguments had gradually become clear, and the proposals in ED 47 were not a surprise at the meetings in December 1989 and January 1990. There was unanimous agreement that goodwill was in the nature of an asset and should be recorded as such. Naturally, there was more contention concerning amortization. The full range of options was aired, but the majority of speakers were, on balance, in favour of ED 47's proposals, and a secret ballot of the twenty-one members produced an overwhelming majority in favour of issuing the ED.[8] It may be that some members voted in favour only because it was an exposure draft designed to seek reaction.

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[6] Information provided by G. Barthes de Ruyter relating to French regulations, at a conference in the Brussels Sheraton, November 1989.

[7] The author can vouch for his own mind, and is confident in his inference relating to the minds of others.

The Reaction to ED 47

The public debate on goodwill began before ED 47 was approved by the ASC. For example, two Big-8 technical partners (one a member of the ASC) published an article expressing their long-held views which opposed systematic amortization charges for goodwill (Stacy and Tweedie, 1989). The present author wrote (Nobes, 1989) in support of ED 47. This led to a flurry of letters and articles (e.g., Thomas, 1990). Some editorial writers and account users were in favour of ED 47 whereas finance directors were strongly opposed to amortization. In such circumstances, the members of the ASC and of working parties could be subjected to political pressure from colleagues or clients.[9] Indeed few members of ASC could be found to admit to voting in its favour. Such pressure had also been clear in the debates concerning brand valuation, which was enthusiastically endorsed by some large companies. Perception of this pressure adds weight to the need for full-time independent members of a standard-setting body (Dearing, 1988), while leaving the worry that most members of the U.K.'s new Accounting Standards Board (ASB) are still part-time.

The three arguments below were among those used by opponents of ED 47. The arguments oppose some of the inevitable consequences of applying conventional accounting logic in a predominantly historical cost accounting system. However, the system cannot be usefully reformed by addressing the goodwill problem in isolation. If, for example, accounts are to give more useful information for decision-making purposes, more fundamental reforms would be necessary, perhaps including moving to a valuation basis for accounting and including non-purchased intangibles.

1. 'Goodwill does not wear out.' This argument uses, for example, hotels and shops as an analogy. Even under the depreciation standard, SSAP 12, many U.K. companies (e.g., Woolworths) had not been depreciating such buildings on the grounds that during the company's ownership they were improved and did not wear out. In place of goodwill amortization, finance directors suggested regular appraisal of the value of goodwill, so that any deterioration would be charged. Given that ED 47 was accused of being academic and impractical (Thomas, 1990), the idea of regular appraisals of the value of an inseparable, unidentifiable and intangible asset seems a desperate measure. Further, this may not satisfy

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[8] For, 19; Against, 1; Abstain, 1.

[9] Personal observation by the author confirms that this was the case with the ASC and its working parties in the case of goodwill.

the legal requirement for systematic depreciation (amortization) over the useful life of the asset.

2. 'Goodwill amortization involves double-charging: once for the amortization of goodwill and again for maintenance of it.' This criticism may be accurate, although arguably irrelevant under conventional accounting. It may really be a criticism of the fact that internally generated goodwill cannot be capitalized. Is the expenditure on the maintenance of goodwill (e.g., advertising or training costs) repairing old goodwill or creating new goodwill? Either way, it must be expensed. However, if it repairs the old goodwill such that it does not wear out, perhaps there need not be an amortization charge.
3. 'The amortization charged per period is arbitrary and the expense is not a cash one.' Of course, the same can be said for any allocations, such as depreciation of machinery. With a less tangible asset, it becomes *more* practical to choose systematic amortization over a standard period.

The comments received by ASC in response to ED 47 were plentiful and, from companies, uniformly opposed, at least to systematic amortization. This included influential organizations such as the Confederation of British Industry (CBI) and *The 100 Group* of finance directors.[10] By then, the strength of this reaction was not a surprise. Not only were finance directors opposed to ED 47, but a large majority of accountancy firms were, including all the largest six (Hastie, 1990).

On 31 July 1990 the ASC was wound up and was able to pass on ED 47 and the responses to it to the Accounting Standards Board (ASB), chaired by David Tweedie who had already publicly recorded his opposition to systematic amortization (Stacy and Tweedie, 1989). The ASB began work amid great, but badly informed, hopes that it would swiftly solve the goodwill problem. Tweedie had already allowed it to be known that the ASB would not leap into precipitate action, particularly on goodwill.[11] The views of most of the nine members of the ASB on this subject were fairly well known, and there was a balance.[12] This paper's history stops at this point with the demise of the ASC.

SUMMARY OF POLITICAL INFLUENCES

The above history of goodwill identifies several interested parties involved in the political process of standard setting. These are summarized below, with an outline of their motives and their influence on the ASC.

1. *Corporate managers.* Watts and Zimmerman (1978) suggest a model for predicting and explaining the lobbying behaviour of directors. Of their factors, bookkeeping

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[10] Letters to ASC of 17 May 1990 and 24 May 1990, respectively.

[11] For example, in a paper to the AAANZ in Perth on 10 July 1990.

[12] For example, Stacy and Tweedie (1989) had written on goodwill (as mentioned above); Munson had chaired the ED 47 working party; other members had voted in favour of ED 47 as members of ASC.

costs, regulation and tax effects seem of little relevance in this case.[13] Those directors who, for reasons of avoiding political interference, felt that they would always want to keep profits low would have no incentive to lobby for or against ED 30, SSAP 22 or ED 47 since these all propose making amortization charges voluntary or compulsory. However, such directors would oppose the idea of compulsory write-off to reserves; and Holgate (1989) notes such opposition.

The most relevant of Watts and Zimmerman's factors is the effect on managers of reductions in earnings[14]; and the strong lobbying against the 1980 Discussion Paper and against ED 47 seems to result from this. Some of those managers who opposed amortization would, nevertheless, be wary of the 'hole in the balance sheet' problem (referred to above). This would seem to suggest lobbying against the control of merger accounting (ED 48) or the control of brand capitalization (ED 52) rather than for or against ED 47.

One might expect more than average concern about goodwill from the management of particular types of companies, for example those with large amounts of goodwill due to many acquisitions, particularly in service industries. This aspect could be subjected to empirical investigation.

2. *Auditors.* A standard practice of immediate deduction from reserves reduces uncertainty compared to the need for estimates of the life of goodwill or appraisals of its impairment. From this point of view it is not surprising that auditors were comfortable with ED 30 and SSAP 22. Nevertheless, subsequently, the responses of some large firms to ED 47 (e.g., the press release of Coopers & Lybrand Deloitte, 1990) favoured capitalization followed by the 'appraisal' technique, which is the most uncertain and difficult to audit, compared to immediate write-off or capitalization with systematic amortization over a given period. As has been mentioned, all the largest firms opposed systematic amortization. This public stance was consistent with the clearly revealed strong preference of their clients and potential clients.
3. *Users.* As usual, the views of users of accounts (e.g., shareholders, creditors, employees) were hard to detect. However, several editorials in professional journals and newspapers were in favour of ED 47 as providing better accountability and more complete information.
4. *Government.* It is now a commonplace that the profession entered the arena of standard-setting partly to forestall government intervention (e.g., Zeff, 1972). In the case of a major topic such as goodwill, the ASC would presumably not wish to be seen by the government to be allowing uncontrolled practices. More directly the government, in the form of the DTI, sees itself as the guardian of the integrity of company law as implementing the EC Company Law Directives.[15] Consequently, at the time of ED 47, the DTI expressed the clear

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[13] Goodwill on consolidation appears only in group accounts which are not relevant for tax purposes; the systematic amortization of goodwill is technically simple; and few U.K. companies are regulated.

[14] As suggested earlier, particularly the perceived effects on share prices, reputation and compensation.

[15] Frequent comments, some minuted, at ASC meetings of DTI representatives, Sarah Brown or Frank Jenkins.

view to the ASC that goodwill, where capitalized, must be systematically amortized.[16] This view was confirmed by legal counsel.

5. *International opinion.* There was no direct pressure from the FASB, SEC or COB for removal of the deduction from reserves treatment,[17] although their views were well known. The most obvious pressure came from the desire of the ASC to contribute to the worldwide harmonization attempts of the IASC through the removal of options as recommended in E 32. Holgate (1989) and Thomas (1990) suggest that this was the major factor in the drafting of ED 47. However, it has been suggested here that international pressures had no direct effect on the drafters of ED 47, although this may have swayed some of the members of the ASC, who were then or had been previously involved in the IASC's work.[18]
6. *The upward force.* In terms of the model introduced as Figure 1 and examined in the following section, a further political actor is suggested, to be labelled 'the upward force', as explained below.

CONCLUSION ON CYCLICAL PATTERN

This paper has analysed the history of goodwill documents published by the ASC in its two decades of life. This case can be seen as an illustration of a cyclical model of standard setting, exhibiting the following four features, which are explained at greater length in Nobes (1991).

The Start Point

The cycle starts from a point of varied practice. In the goodwill case, this paper has noted that in the 1970s, before the first ASC working party, there was indeed a great variety of practice. An explanation was offered for this in terms of different circumstances facing different managers.

Stimulus for Action

The various stimuli for ASC action noted in this paper come in two chronological groups. First, in the 1970s there was the prior existence of U.S. rules; the awareness of diversity of practice; and the publication of drafts of the EC Fourth and Seventh Directives. A second wave of stimuli in the late 1980s led to the need to revise SSAP 22. These included an increase in takeover activity in a bull market, and the related increase in amounts of goodwill (particularly in the case of service companies) with resulting difficulties of its write-off; the controversies surrounding the related problems of merger accounting and brand capitalization; the IASC proposals for elimination of the write-off option and the related international pressure for change to the U.K. rules; and the criticisms of laxness of rules and practice, which had also not escaped the notice of the DTI.[19]

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[16] Letters to ASC and to the ED 47 working party in 1989, and minuted comments at ASC meetings in early 1990.

[17] That is, the Financial Accounting Standards Board (U.S.), the Securities and Exchange Commission (U.S.) and the French version of the latter, the *Commission des opérations de bourse.*

[18] For example, Allan Cook had been Secretary of IASC, and Peter Stilling was a member of the IASC's Board. There was also an IASC representative entitled to speak but not vote at ASC meetings. The parent bodies of the ASC had promised to use their best endeavours to ensure that U.K. standards were in line with those of the IASC.

The Downward Force

'Downward' is used here in the context of Figure 1; that is, towards less standardization. It is suggested that the downward force comes from corporate managers. As has been explained, different managers prefer different treatments. Therefore, removal of any option will probably be unattractive for particular companies. Furthermore, managers realize that their own circumstances may change, which reinforces the pressure for the preservation of options. In the case of goodwill, there is the additional point that several of the ASC's proposals for standardization involved the income-reducing practice of amortization. As discussed earlier, this is likely to be unattractive to most managers. In their lobbying, management may be supported by accountancy firms who are, in effect, appointed and paid by directors. A particularly clear example of this is the response of large firms to ED 47, as examined above.

The Upward Force

The final element of the model, as described below, is the most difficult to identify. The upward force (in Figure 1) is an essential feature of the model, for otherwise the ASC could have immediately and without controversy published a standard that was suitable to managers. By contrast, many of the proposals of the ASC on goodwill and other matters (see Nobes, 1991) involved a large degree of standardization and a concentration on income-reducing practices. Furthermore, even if the downward force is satisfied by a particular standard, the upward force often reopens the issue. Hence, cyclical patterns can emerge.

It is suggested that the upward force comprises individual senior members of the profession. In their capacity as rule-makers, they are able to argue privately and ballot secretly for standardization on what seems to them to be good accounting. Support for the upward force comes from government, the press and international organizations. In the case of goodwill, the arguments have been addressed in some detail earlier. For example, it is interesting that the ASC, a majority of whose members were audit partners or finance directors, felt able to resist pressures from corporate managers when voting on ED 47. Observation of the debate[20] suggests that many members were able to resist such pressures because they stated that ED 47 was the best available answer to the problem.[21] This is not foreseen in the 'market for excuses' model of Watts and Zimmerman (1979), but that model has previously been criticized for such deficiencies (Laughlin and Puxty, 1983; Peasnell and Williams, 1986).

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[19] As footnote 15.

[20] The author was present at all relevant meetings of the working party and the ASC.

[21] Of course, the criteria used here are unclear.

Because of the problems of lack of independence of part-time standard-setting bodies, the same individuals who are members of the upward force (or certainly their firms, companies or colleagues) may also appear to be members of the downward force. So ASC members from large firms and companies voted for ED 47, while their organizations and their individual colleages publicly opposed it.

Figure 1 is an impressionistic illustration of the goodwill cycle,[22] showing the degree of standardization proposed by ASC documents. In terms of the above model, the start point and the stimuli for action have already been addressed. The first point on Figure 1 is the 1980 Discussion Paper, which shows the influence of the upward force in that the proposal was for standard practice of capitalization and amortization. For other topics, the first published ASC documents were also high on the y-axis (e.g., merger accounting, deferred tax and R&D).

The reaction from the downward force, as recorded earlier, produced a two-stage retreat to the permissive SSAP 22, as explained in the 'The 1980s' section earlier. This was followed by amendments, but to disclosure rules only, in ED 44 and SSAP 22 (revised). However, criticism of the result of SSAP 22 from members of the profession, the press and the DTI, and the opinion of international bodies, led to the review of SSAP 22 and to another opportunity for the upward force to assert itself in the form of ED 47.

The model predicts that the next stage in the cycle will be a retreat from income-reducing proposals and the publication of a standard that allows more room for judgment and, therefore, choice. Of course, the standard-setting arrangements changed in 1990 and, as noted, this itself has been blamed on the ASC's performance on goodwill (Singleton-Green, 1990). However, the cyclical mechanism may be sufficiently robust to survive this, just as the ASC's 1990 recommendations were very similar to its 1980 recommendations, despite the changing membership of the committee and its secretariat.[23]

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[22] The exact scoring in Figure 1 is, of course, subjective. However, a similar cycle would be visible with any reasonable alternative scorings.

[23] Not only the individual members changed, but also the nature of the membership. Until July 1982, ASC had twenty-three members all of whom were accountants. After this, there were twenty-one members, including five 'users', not necessarily accountants. Nevertheless, partners in the large audit firms remained prominent throughout.

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APPENDIX I

THE CALCULATION OF GOODWILL

This appendix sets out the various methods of calculation of the size of goodwill at acquisition and beyond. (For descriptions of practices, see McKinnon, 1983; Touche Ross, 1989; FEE, 1991; Nobes and Parker, 1991; for discussion of the difference between internally generated and purchased goodwill see Ma and Hopkins, 1988.)

At Acquisition

Under the 'classical method', goodwill is the difference between the cost of the investment and the book value of the net assets at the date of acquisition. This is shown as G^{C}_{o} in Table A1. This is the method used, for example, originally in Britain and in much of continental Europe until the late 1980s.

TABLE A1

GOODWILL AT ACQUISITION

Case I

Cost of investment = I = \$8m
Book value of net assets = B_o = \$3m
Fair value of net assets = F = \$4.5m
Method 1: Classical (e.g., French early 1980s)
$G^{C}_{o} = I - B_o = 8 - 3 = 5$
Method 2: Modern British
$G^{B}_{o} = I - F = 8 - 4.5 = 3.5$
Method 3: Modern European
(i) $I - B_o = x = 5$
(ii) Allocate x to the net assets up to the extent (y) that fair values allow this.
$y = F - B_o = 1.5$
(iii) $G^{E}_{o} = I - (B_o + y) = 8 - (3 + 1.5) = 3.5$

Case II

However, take the case where the facts are the same, except that $I = 3.5$. Then:
1. $G^{C}_{o} = I - B_o = 3.5 - 3 = 0.5$
2. $G^{B}_{o} = I - F = 3.5 - 4.5 = (1)$
3. $I - B_o = x = 0.5$

As before, $y = F - B_o = 1.5$
but allocation of x does not exhaust y, so:
$G^{E}_{o} = I - (B_o + x) = 3.5 - (3 + 0.5) = 0$

Case III

Suppose that $I = 2.5$. Then:
1. $G^{C}_{o} = I - B_o = 2.5 - 3 = (0.5)$
2. $G^{B}_{o} = I - F = 2.5 - 4.5 = (2)$
3. $I - B_o = x = (0.5)$
   This cannot be allocated, so $G^{E}_{o} = (0.5)$

The 'modern British' method calculates goodwill at the difference between the cost of the investment and the fair values of net assets (G^{B}_{o} in Table A1). This method was formally adopted in the U.K. in SSAP 14 in 1978, and was previously in use in the U.S.A. (e.g., in APB Opinion 17). It is one of the two methods allowed by the EC Seventh Directive (Article 19, 1, b), and is found in the laws of member states, as shown in Table A2.

TABLE A2

SEVENTH DIRECTIVE GOODWILL CALCULATIONS

	Methods allowed (see Table A1)
Belgium	2 and 3
Denmark	2 and 3
France	2 and 3
Germany	2 and 3
Ireland	2 (no law, but SSAPs 14 and 22)
Italy	3
Luxembourg	2 and 3
Netherlands	2
Portugal	2 and 3
Spain	2 and 3
U.K.	2
For comparison:	
Australia	2
U.S.	2

The 'modern European' method first calculates an amount, called 'x' in Table A1, like classical goodwill. Then x, if positive, is allocated to the assets and liabilities of the subsidiary to the extent that their fair values can absorb it. Any remaining difference is then called goodwill (G^E_o in Table A1). This method is allowed in the Seventh Directive (Article 19, 1, a); is taken up in some member state laws (see Table A2); and is frequently practised in Germany.

As may be seen from Table A1, methods 2 and 3 lead to smaller goodwill figures than method 1, assuming that the fair value exceeds the book value of the net assets. Also, assuming the normal case where the investment exceeds or equals the fair value of the assets, methods 2 and 3 lead to the same goodwill figures. However, where the investment is lower than the net asset values, methods 2 and 3 diverge, as shown in Table A1.

In summary:

If $I > F > B_o$, then $G^C_o > G^E_o = G^B_o$

If $F > I > B_o$, then $G^C_o > G^E_o > G^B_o$, and $G^C_o = O$, G^B_o is negative

If $F > B_o, > I$, then $G^C_o = G^E_o > G^B_o$, and all are negative.

The effects of this are, for example, that goodwill figures tend to be lower under Anglo-Saxon calculations than under traditional continental calculations. This is especially the case, given conservative continental book valuations (Gray, 1980).

Also, negative goodwill is most likely to arise under the Anglo-Saxon method. Coupled with conservatism, this factor will lead even 'modern German' goodwill to be on average higher than Anglo-Saxon goodwill (see Table A1, Cases II and III).

Subsequently

After acquisition, there might be seen to be four main methods of treating goodwill, summarized in Table A3. The first, which was common in the U.K. until the late 1970s, is to leave the goodwill permanently in the balance sheet.

TABLE A3

GOODWILL AFTER ACQUISITION

Using numbers from Table A1. Also, book value of net assets at time t_1 (i.e., B_1) has become $4m. Other symbols are as in Table A1, with the superscripts P for permanent, A for American and OG for Old German, and the subscript 1 for the end of period 1.

Permanence

$G^P_1 = G^C_o$

Amortization

Classical (e.g., 10-year write-off)

$G^C_1 = G^C_o (1 - 0.1) = 5 - 0.5 = 4.5$

Modern European (e.g., 10-year write-off)

$G^E_1 = G^E_o (1 - 0.1) = 3.5 - 0.35 = 3.15$

American (e.g., 40-year write-off)

$G^A_1 = G^B_o (1 - 0.025) = 3.5 - 0.0875 = 3.4125$

Write-off

$G^B_1 = 0$

Re-calculation

$G^{OG}_1 = I - B_i = 8 - 4 = 4$

The second method is amortization through the profit and loss account. This could be sub-divided into three:

1. *Classical*: short write-off of the 'classical' quantity of goodwill, typical until the end of the 1980s in some continental European countries, perhaps because this was the tax treatment for non-consolidation purchased goodwill.
2. *Modern European*: the same method applied to the 'modern European' quantity of goodwill.

3. *American*: a longer amortization period applied to the quantity of goodwill calculated by reference to fair values. In the case of the last method, APB Opinion 17 imposes a maximum period of forty years; the Australian Standard (AAS 18 and ASRB 1013) uses a maximum of twenty years; the international standard (IAS 27) has a maximum of twenty years; and the U.K.'s ED 47 of 1990 has a maximum of twenty years or, if the directors can justify longer, up to a maximum of forty years.

A third main method is the Modern British: SSAP 22 (of 1984 and as amended in 1989) recommends but does not require goodwill to be deducted immediately from reserves, therefore never being debited to the profit and loss account.

Lastly, the 'Old German' method involved the recalculation of goodwill at each year end, by reference to the new book value of net assets. The resulting number was, sensibly, called 'difference arising on consolidation' rather than goodwill.

These methods are illustrated in Table A3, using the same data as Table A1. Also, a summary of current rules is shown in Table A4 for EC countries and for the U.S. and Australia.

TABLE A4

SEVENTH DIRECTIVE GOODWILL TREATMENT

	Methods allowed (see Table A3)
Belgium	2
Denmark	2 and 3
France	2 and 3
Germany	2 and 3
Ireland	2 and 3 (no law, but SSAP 22)
Italy	2 and 3
Luxembourg	2 and 3
Netherlands	2 and 3
Portugal	(no law or practice)
Spain	2
U.K.	2 and 3
For comparison:	
Australia	2 (maximum 20-year write-off)
U.S.	2 (maximum 40-year write-off)

APPENDIX II

MEMBERS OF WORKING PARTIES AND ASC

Discussion Paper on Goodwill (published 1980)
- J. M. Renshall (Big-8)
- I. A. Leeson (Big-8)
- F. R. Black (Finance Director)
- J. A. Knox (DTI)

ED 30 (of 1982) and SSAP 22 (of 1984)
- J. M. Renshall (Big-8)
- P. Espenhahn (City)
- I. A. Leeson (Big-8)
- F. R. Black (Finance Director)

ED 47 (of 1990)
- R. J. Munson (Big-8)
- R. Paterson (Big-8)
- R. Salmon (City)
- D. Bonham (Finance Director)
- C. W. Nobes (Academic)

Membership of ASC 1989-90

Main employment	*No. of members*
Big-8 partner	7
Large company	4
Retired	5
Broker, bank	3
Public sector	1
University	1
	21

APPENDIX III

LIST OF EXPOSURE DRAFTS AND STANDARDS OF THE ASC AND IASC REFERRED TO IN THE PAPER

Accounting Standards Committee

SSAP 4	*The Accounting Treatment of Government Grants*	1974, rev. 1990
12	*Accounting for Depreciation*	1977
13	*Accounting for Research and Development*	1977, rev. 1989
20	*Foreign Currency Translation*	1983
22	*Accounting for Goodwill*	1984, rev. 1989
23	*Accounting for Acquisitions and Mergers*	1985
24	*Accounting for Pension Costs*	1988

ED 30	*Accounting for Goodwill*	1982
42	*Accounting for Special Purpose Transactions*	1988
44	*Accounting for Goodwill — Additional Disclosures*	1988
47	*Accounting for Goodwill*	1990
48	*Accounting for Acquisitions and Mergers*	1990
49	*Reflecting the Substance of Transactions in Assets and Liabilities*	1990
51	*Accounting for Fixed Assets and Revaluations*	1990
52	*Accounting for Intangible Fixed Assets*	1990
TR 738	*The Accounting Standards Committee's Provisional Views on Accounting for Intangible Assets with Special Reference to Brands*	
International	Accounting Standards Committee	
IAS 22	*Accounting for Business Combinations*	1983
E 22	*Accounting for Business Combinations*	1981
E 32	*Comparability of Financial Statements*	1989
E 45	*Business Combinations*	1992

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KEE H. CHUNG, HONG S. PAK AND RAYMOND A. K. COX

Patterns of Research Output in the Accounting Literature: A Study of the Bibliometric Distributions

This study examines whether any regularity exists in the publication pattern among accounting researchers. The empirical results reveal that a strong bibliometric regularity exists in the accounting literature: the number of authors publishing in papers is approximately $1/n^c$ of those publishing one paper. It is shown that the accounting literature conforms very well to the model with $c = 1.872$ if data are taken from a large collection of journals. When applied to individual journals, the result shows that values of c range from 2.220 to 4.368. The graduates of seven graduate programs are found to account for more than one-third of the most prolific authors, indicating strong institutional dominance in the production of accounting literature.

Key words: Concentration; Journals.

It is well known that a high degree of skewness exists in the distribution of output among individuals in certain kinds of human activity. The phenomenon 'success breeds success', wherein a relatively small number of people dominate the activities in which they are engaged, is frequently observed in various social settings. For instance, there are only a few hundred full-time soloists on any given musical instrument, although the market for classical music has never been larger than it is now. Furthermore, only a few first-rate performers out of this small total dominate the market for live-performance and commercial recording. These phenomena are analogous to the folk saying 'the rich get richer and the poor get poorer'.

Lotka's Law of scientific productivity is a bibliometric example of such empirical laws. Lotka (1926) proposes an inverse square law relating authors of scientific papers to the number of papers written by each author. Using data in the decennial index of *Chemical Abstracts* and in the name index of Auerbach's *Geschichtstafeln der Physik*, Lotka plots the number of authors against the number of contributions

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made by each author on a logarithmic scale. Lotka finds that the points are closely scattered around a straight line having a slope of approximately negative two. On the basis of this observation Lotka (p. 323) concludes that:

> In the cases examined, it is found that the number of persons making 2 contributions is about one-fourth of those making one; the number making 3 contributions is about one-ninth, etc.; the number making *n* contributions is about $1/n^2$ of those making one; and the proportion, of all contributors, that make a single contribution, is about 60 per cent.

Thus, Lotka's empirical finding can be summarized by the equation:

$$a_n = a_1/n^2, n = 1,2,3,\ldots; \qquad (1)$$

where a_n = the number of authors publishing n papers and
a_1 = the number of authors publishing one paper.

Numerous studies have evaluated the contribution of institutions and individuals to the accounting literature using journal publications. Bazley and Nikolai (1975), Weber and Stevenson (1981), Windal (1981), Heck and Bremser (1986) and Reeve and Hutchinson (1988) have examined the institutional contributions to accounting journals and their impact on the reputation of academic departments. Bazley and Nikolai (1975), Heck and Bremser (1986) and Jacobs, Hartgraves and Beard (1986) have documented the doctoral origins of the authors. The relative quality of accounting journals and their impact on the accounting literature have been examined by Benjamin and Brenner (1974), Weber and Stevenson (1981), and Dyckman and Zeff (1984).

On the other hand, other studies have employed citation analysis to examine various aspects of the production and distribution of the accounting literature. McRae (1974) examined the pattern of information flows between the accounting and other knowledge systems and within the accounting knowledge system. Dyckman and Zeff (1984), Brown and Gardner (1985b) and Brown, Gardner and Vasarhelyi (1987) have assessed the impact of journals on the accounting literature. Brown and Gardner (1985a), Williams (1985) and Snowball (1986) have evaluated the contributions of accounting faculty and doctoral programs. In addition, Bricker (1988, 1989) used citation analysis to examine the aspect of knowledge preservation and intellectual structure in the accounting discipline. Subotnik (1989) provided a comment on Bricker's work.

However, none of those studies examined whether the pattern of productivity in the accounting literature conforms to an empirical regularity, such as Lotka's Law, which has been observed in the literature of other academic disciplines.[1] The purpose of this paper is to examine whether bibliometric regularities, such as Lotka's inverse square law and its variants, exist in the accounting literature. We believe that identification of such empirical regularities is important since it will help assess both the likelihood of multiple publications in the accounting literature and the degree of author concentration among different accounting journals.

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[1] Since the publication of Lotka's paper, numerous authors have attempted to apply Lotka's Law to the literature of various disciplines. While in some studies Lotka's inverse square law holds (e.g., Murphy, 1973, in humanities; Schorr, 1975, in map librarianship; and Chung and Cox, 1990, in finance), in others it does not. Voos (1974) finds that for the information science literature an exponent of 3.5 gives the best fit with empirical data. Schorr (1974) finds that Lotka's inverse square law is not applicable to the literature of library science and proposes an inverse quadruple law whereby, for each 100 contributors of a single article, about six will contribute two papers, about one will contribute three papers, etc. Worthen (1978) reports that Lotka's Law does not fit the literature in medicine.

In addition, we examine the centres of published accounting research by identifying the most prolific authors in major accounting journals, along with their doctoral origins and current academic affiliations. Earlier, Heck and Bremser (1986) identified top performers in the accounting literature based upon publications in *The Accounting Review*. This study, covering publications in fourteen major academic accounting journals during 1968–88, together with the study by Heck and Bremser, provides considerable evidence regarding who were the most prolific contributors to the accounting literature during the last two decades.

A BRIEF LOOK AT THE THEORY OF THE BIBLIOMETRIC DISTRIBUTIONS

Given the ubiquity of bibliometric distributions and the quantity of literature discussing them, some studies have attempted to discover why such distributions occur in the first place and what their important analytical properties are. Deterministic theorization of bibliometric distributions has been presented by Mandelbrot (1954) and Bookstein (1977). Stochastic theorization has been offered by Simon (1955) and Price (1976), among others.

Using a model of word storage in the human mind and information theoretic considerations, Mandelbrot (1954) suggested that the number of papers of the rth ranking author, f(r), is proportional to $1/(1+\beta r)\tau$ where β and τ are constants. Bookstein (1977), taking a very different route, suggested that the number of authors publishing n papers is proportional to $1/n^c$, where c is a constant. Note that, for $\tau = 1$ or $c = 2$, these distributions are simplified to Lotka's Law.[2] Thus, Lotka's Law is a special case of the forms derived by Mandelbrot and Bookstein on theoretical grounds.

Simon (1955) proposed a stochastic model which, among other things, implied that the number of authors with n publications is proportional to $1/[n(n+1)(n+2)\ldots.(n+k-1)]$ for some integer k, or more generally, to $\Gamma(n)/\Gamma(n+c)$ where c is a constant. Note that if n is much larger than c, $\Gamma(n)/\Gamma(n+c) \approx 1/n^c$, which is the same result as Bookstein's.

Finally, Price (1976) suggested that the 'Cumulative Advantage Distribution', which can be derived from a modification of the Polya Urn model, provides a sound conceptual basis for the statistical modelling of the situation in which 'success breeds success'. The Polya Urn model supposes that fate has in storage an urn containing red and black balls and, at regular intervals, a ball is drawn at random. At each drawing the number of balls of the colour drawn is increased while that of the other colour remains unchanged. Therefore, each occurrence of a red or of a black increases the probability of a further such occurrence; that is, success

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[2] See Bookstein (1977) for the proof.

(i.e., a red ball) is rewarded by an increased chance of further success, but failure (i.e. a black ball) is punished by an increased chance of further failure (Feller, 1968). The cumulative advantage distribution differs from the Polya Urn model in that success increases the chance of further success, but failure has no subsequent effect in changing the probability of failure. Price shows that such a stochastic law is governed by the Beta function which can be approximated by a skewed or hyperbolic distribution of the type that is widespread in bibliometric and diverse social science phenomena. In particular, this is shown to be an appropriate underlying probability theory for Lotka's Law of scientific productivity.

In sum, it seems that Lotka's Law and its variants not only have an empirical validity but also theoretical robustness since they can be derived from different sets of assumptions. The primary purpose of this paper is to examine whether Lotka's Law and its variants are applicable to the accounting literature. Specifically, we wish to test the following equation:

$$a_n = a_1 / n^c,\ n = 1,2,3,\ldots; \qquad (2)$$

where a_n = the number of authors publishing n papers;
a_1 = the number of authors publishing one paper; and
c = a constant.

DATA

Data Description

Data for the present study came from fourteen journals published in English which primarily publish academic accounting research. Those journals were selected from the list of 'academic' accounting journals identified in Dyckman and Zeff (1984)

TABLE 1

LIST OF JOURNALS USED AND THEIR ABBREVIATION

Journal (beginning study period[a])	Abbreviation
Abacus (1968)	*ABA*
Accounting and Business Research (1970)	*ABR*
Accounting, Organization and Society (1976)	*AOS*
The Accounting Review (1968)	*AR*
Auditing: A Journal of Practice and Theory (1982)	*AJPT*
Contemporary Accounting Research (1984)	*CAR*
International Journal of Accounting Education and Research (1968)	*IJAER*
Journal of Accounting, Auditing and Finance (1977)	*JAAF*
Journal of Accounting and Economics (1979)	*JAE*
Journal of Accounting Education (1983)	*JAED*
Journal of Accounting Literature (1982)	*JAL*
Journal of Accounting and Public Policy (1982)	*JAPP*
Journal of Accounting Research (1968)	*JAR*
Journal of Business Finance and Accounting (1974)	*JBFA*

[a] Ending study period is 1988 for all journals.

which are also available in *Database of Accounting Research* (1989).[3] The list of journals used and their abbreviations are presented in Table 1. Authorship for all contributions as reported in *Database of Accounting Research* was compiled for each of the fourteen journals for the last twenty-one years; that is, 1968 (or inaugural year) through 1988.

Table 2 presents the summary of the data set which shows the number of contributions in each journal, the number of authors who contributed to each journal, and the proportion of authors by the number of publications.[4] The magnitude of the database and the voluminous contributions of the fourteen journals are reflected in the table. In total, those journals published 5,580 papers over the last twenty-one years, and a total of 3,422 authors contributed to the journals.

TABLE 2

FREQUENCY DISTRIBUTION OF AUTHORS BY NUMBER OF PUBLICATION FOR THE PERIOD 1968–88

(Lotka's Law states that the number of authors publishing n papers is $1/n^2$ of those publishing one paper)

Journal	No. of papers	No. of authors	Frequency distribution in percentages									
			1	2	3	4	5	6	7	8	9	>9
ABA	288	246	73.2	16.3	5.7	2.8	0.8	0.0	0.4	0.0	0.4	0.4
ABR	609	500	71.4	15.0	5.8	3.8	1.4	0.8	0.6	0.6	0.2	0.4
AOS	397	401	72.8	16.2	4.2	3.0	1.0	1.0	0.0	0.7	0.7	0.4
AR	1,521	1,230	62.6	18.8	7.7	4.3	2.4	1.3	1.1	0.7	0.3	0.8
AJPT	122	173	75.7	17.3	4.0	1.7	0.6	0.0	0.6	0.0	0.0	0.1
CAR	106	129	76.7	19.4	3.1	0.0	0.8	0.0	0.0	0.0	0.0	0.0
IJAER	421	434	80.6	12.9	4.4	1.2	0.9	0.0	0.0	0.0	0.0	0.0
JAAF	228	293	84.3	10.9	3.4	0.7	0.7	0.0	0.0	0.0	0.0	0.0
JAE	108	132	76.5	12.9	4.5	3.8	1.5	0.8	0.0	0.0	0.0	0.0
JAED	190	291	89.0	9.3	1.4	0.3	0.0	0.0	0.0	0.0	0.0	0.0
JAL	51	83	96.4	2.4	1.2	0.0	0.0	0.0	0.0	0.0	0.0	0.0
JAPP	118	154	87.7	7.1	1.9	1.9	0.6	0.6	0.0	0.0	0.0	0.2
JAR	777	673	68.5	15.6	7.6	2.8	2.1	0.7	0.4	0.3	1.0	1.0
JBFA	644	628	69.9	17.8	6.2	2.7	0.6	1.8	0.6	0.2	0.0	0.2
All journals	5,580	3,422	57.7	16.7	8.6	4.2	3.0	2.6	1.7	0.9	1.0	3.6
Lotka's Law[a]			60.8	15.2	6.8	3.8	2.4	1.7	1.2	0.9	0.8	6.4

[a] This row gives the proportions of authors predicted by Lotka's Law.

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[3] *Database of Accounting Research* contains information about articles published in twenty-four accounting journals over a twenty-one-year period from January 1968 to December 1988. All articles listed in the table of contents of these journals are included in the database. These include Main Articles, Notes, Comments, and Specialized Articles. Book reviews are omitted.

[4] In the case of multiple authorship, we use the 'normal count', that is, each author of an article receives full credit. We aggregate the data for $n \geq 10$ for succinctness and also for some statistical reason. The chi-square test, which we perform later, requires that the expected (i.e., theoretical) number of observations in each category should be at least five. Detailed data for each journal for the case $n \geq 10$ are available from the authors upon request.

The table shows, among other things, the difficulty of repeated publications in accounting journals. Among 3,422 authors, the majority of authors (57.7 per cent) published only once, and only 9.8 per cent of authors contributed more than five times. One-time authors are common among each of the fourteen journals. For instance, 62.6 per cent of all *The Accounting Review* authors appear only once. Percentages of one-time authors range from 62.6 for *The Accounting Review* to 96.4 for *Journal of Accounting Literature.*

Noticeably large percentages of one-time authors for *Journal of Accounting Education* (89.0 per cent), *Journal of Accounting Literature* (96.4 per cent), and *Journal of Accounting and Public Policy* (87.7 per cent) may reflect the fact that those journals are relatively new, and thus few authors have had the opportunity to have multiple publications in them. On the other hand, it is interesting to observe that *The Accounting Review* and *Journal of Accounting Research* have higher concentrations among their contributors than other journals. That is, the percentages of authors with more than one publication in these journals are 37.4 and 31.5, respectively, whereas the average percentage of multiple publications for all other journals is 20.5. This may reflect the fact that those journals have existed for a longer period compared to other journals, and many authors have therefore had the opportunity to publish more than once. Or, perhaps, this may indicate that the phenomenon 'success breeds success' is more common in higher quality publications.[5] Finally, the higher average percentage (77.5) of a single publication for individual journals compared to that (57.7) of all fourteen journals as a whole reflects that authors tend to publish in more than one journal.

Most Prolific Authors and their Institutional Affiliations

Those authors appearing most frequently (at least eleven papers) in major accounting journals, along with their doctoral origins and current academic affiliations, are listed in Table 3.[6] The doctoral origins and current affiliations are obtained from Hasselback's *Accounting Faculty Directory* (1990), CMG's *National Faculty Directory* (1989), and the Association of Commonwealth Universities' *Commonwealth Universities Yearbook* (1989).[7] The number of adjusted appearances takes into account co-authorship, that is, an author earns fractional credit, $1/n$, for a co-authored paper with *n* authors. The adjusted appearances may be usefully interpreted in the context of a recent empirical finding by Sauer (1988, p. 855) that 'an individual's [monetary] return from a co-authored paper with *n* authors is approximately $1/n$ times that of a single-authored paper'. For total appearances, the leading contributors are Chambers (31), Demski (31), Lee (26), Kinney (26) and Abdel-Khalik (26).[8] For adjusted appearances, Chambers (29.5) also heads the list, followed by Demski (23.5), Lee (22.8), Kinney (21.8) and Kaplan (20.3).

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[5] Benjamin and Brenner (1974), Weber and Stevenson (1981) and Howard and Nikolai (1983) report that the *Journal of Accounting Research* and *The Accounting Review* are the two highest ranked accounting journals, based on 'perceived quality' of journals. Also, McRae (1974) reports that those journals are the most frequently cited accounting journals.

[6] An alternative (and perhaps better) method of evaluating the contribution of institutions, individuals and journals to an academic field is citation analysis. (See Garfield, 1979, for a review of the applications of citations analysis in the natural and social sciences.) Since Lotka's Law has been applied primarily to the *number of articles* written by authors in the literature, however, we follow the tradition in this study. It may be an interesting extension of this study to use citation counts as the measure of research output, and to see if there exist empirical regularities in the pattern of research output.

[7] It was not common for the U.K. and Australian academics to have PhD degrees until recently. The university from which they received their *last* degrees are reported. For authors not reported in these sources, we traced their most recent publications to identify their current affiliatons.

TABLE 3

MOST PROLIFIC AUTHORS IN 14 MAJOR ACCOUNTING JOURNALS FOR THE PERIOD 1968–88

		Appearance			
Rank	Author	Total	Adjusted	Degree from	Current employer[a]
1	Chambers, R. J.	31	29.5	Sydney	Sydney
2	Demski, J. S.	31	23.5	Chicago	Yale
3	Lee, T. A.	26	22.8	Strathclyde	Edinburgh
4	Kinney, W. R.	26	21.8	Michigan State	Texas
5	Abdel-Khalik, A.	26	20.2	Illinois	Florida
6	Kaplan, R. S.	25	20.3	Cornell	Harvard
7	McKeown, J. C.	25	14.7	Michigan State	Penn. State
8	Ronen, J.	25	14.0	Stanford	New York
9	Peasnell, K. V.	24	17.2	Lancaster	Lancaster
10	Beaver, W. H.	24	14.4	Chicago	Stanford
11	Copeland, R. M.	23	11.5	Michigan State	Northeastern
12	Ashton, R. H.	22	16.7	Minnesota	Duke
13	Ijiri, Y.	22	14.8	Carnegie-Mellon	Carnegie-Mellon
14	Lev, B.	21	15.7	Chicago	UC—Berkeley
15	Belkaoui, A.	20	17.3	Syracuse	Illinois—Chicago
16	Barlev, B.	19	12.2	New York	Hebrew
17	Gordon, L. A.	19	11.8	RPI	Maryland
18	Bierman, H.	18	15.5	Michigan	Cornell
19	Gonedes, N. J.	18	14.8	Texas	Pennsylvania
20	Sunder, S.	18	13.3	Carnegie-Mellon	Carnegie-Mellon
21	Falk, H.	18	10.2	Hebrew	McMaster
22	Smith, C. H.	18	8.7	Penn. State	Penn. State
23	Grinyer, J. R.	17	16.0	LSE	Dundee
24	Firth, M.	17	15.5	Bradford	Colorado—Denver
25	Flamholtz, E. G.	17	13.5	Michigan	UCLA
26	Revsine, L.	17	13.0	Northwestern	Northwestern
27	Ferris, K. R.	17	12.0	Ohio State	SMU
28	Findlay, M. C.	17	11.5	Texas	Fin Fin Inc.
29	Chow, C. W.	17	11.3	Oregon	San Diego State
30	Mock, T. J.	17	10.3	UC—Berkeley	Southern California
31	Birnberg, J. G.	17	9.0	Minnesota	Pittsburgh
32	Shields, M. D.	17	8.3	Pittsburgh	San Diego State
33	Strawser, R. H.	17	7.2	Maryland	Texas A&M
34	Ma, R.	16	11.8	British Columbia	New South Wales
35	Brief, R. P.	16	10.8	Columbia	New York
36	Vickrey, D. W.	16	10.5	Texas	Tulsa

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[8] For the most frequently cited authors and articles in major accounting journals, see Brown and Gardner (1985a, 1985b).

Table 3 (contd)

Rank	Author	Appearance Total	Appearance Adjusted	Degree from	Current employer[a]
37	Ingram, R. W.	16	10.2	Texas Tech	Alabama
38	Dirsmith, M. W.	16	8.5	Northwestern	Penn. State
39	Hopwood, W. S.	16	7.7	Florida	Houston
40	Reckers, P. M. J.	16	7.2	Illinois	Arizona State
41	Gray, S. J.	15	11.5	Lancaster	Glasgow
42	Ohlson, J. A.	15	11.2	UC—Berkeley	Columbia
43	Libby, R.	15	10.7	Illinois	Cornell
44	Dhaliwal, D. S.	15	9.7	Arizona	Arizona
45	Dyckman, T. R.	15	9.1	Michigan	Cornell
46	Hughes, J. S.	15	8.5	Purdue	Minnesota
47	Swieringa, R. J.	15	7.8	Illinois	FASB
48	Ashton, R. K.	14	14.0	LSE	Bristol
49	Uecker, W. C.	14	8.4	Texas	Rice
50	Bailey, A. D.	14	6.1	Ohio State	Arizona
51	Benston, G. J.	13	12.5	Chicago	Emory
52	Most, K. S.	13	12.0	Florida	Florida International
53	Nobes, C. W.	13	12.0	Exeter	Reading
54	Wells, M. C.	13	11.5	Sydney	Sydney
55	Bhaskar, K. N.	13	11.0	LSE	East Anglia
56	Verrecchia, R. E.	13	10.3	Stanford	Pennsylvania
57	Skerratt, L. C. L.	13	8.7	LSE	Durham
58	Francis, J. R.	13	8.5	New England	Iowa
59	Scapens, R. W.	13	8.0	Manchester	Manchester
60	Livnat, J.	13	7.2	New York	New York
61	Comiskey, E. E.	13	7.2	Michigan State	Georgia Tech
62	Waller, W. S.	13	6.8	U. of Wash.	Arizona
63	Solomon, I.	13	6.5	Texas	Illinois
64	Brown, L. D.	13	6.4	Rochester	SUNY—Buffalo
65	Keane, S. M.	12	12.0	Glasgow	Glasgow
66	Barnes, P.	12	11.0	Sheffield	Manchester
67	Foster, G.	12	10.8	Stanford	Stanford
68	Houghton, K. A.	12	10.0	Western Australia	Curtin University of Technology
69	Loeb, S. E.	12	9.5	Wisconsin	Maryland
70	Parker, L. D.	12	9.3	Monash	Flinders
71	Walker, R. G.	12	8.8	Sydney	New South Wales
72	Imhoff, E. A.	12	8.3	Michigan State	Michigan
73	Zimmerman, J. L.	12	8.3	UC—Berkeley	Rochester
74	Raman, K. K.	12	8.2	Indiana	North Texas
75	Jiambalvo, J.	12	7.3	Ohio State	University of Washington
76	Manes, R. P.	12	7.2	Purdue	Florida State
77	Petri, E.	12	7.0	New York	SUNY—Albany
78	Weygandt, J. J.	12	6.8	Illinois	Wisconsin
79	Yamey, B. S.	11	11.0	Cape Town	LSE
80	Whittington, G.	11	10.3	Cambridge	Bristol
81	Gambling, T. E.	11	10.0	Birmingham	McGill
82	Zeff, S. A.	11	9.5	Michigan	Rice
83	Magee, R. P.	11	9.3	Cornell	Northwestern
84	Nurnberg, H.	11	9.3	Columbia	CUNY
85	Sterling, R. R.	11	9.3	Florida	Utah
86	Hopwood, A.	11	9.0	Chicago	LSE
87	Lusk, E. J.	11	8.5	Northwestern	Pennsylvania
88	Cushing, B. E.	11	8.3	Michigan State	Penn. State
89	Pratt, J.	11	8.0	Indiana	University of Washington
90	Frank, W. G.	11	8.0	Illinois	Wisconsin
91	Livingstone, J. L.	11	7.8	Stanford	Babson

TABLE 3 (contd)

Rank	Author	Appearance Total	Appearance Adjusted	Degree from	Current employer[a]
92	Deakin, E. B.	11	7.7	Illinois	Texas
93	Smieliauskas, W.	11	7.0	Wisconsin	Toronto
94	Nichols, D. R.	11	6.8	Oklahoma	Texas Christian
95	Barefield, R. M.	11	6.7	Ohio State	Georgia
96	Weil, R. L.	11	6.5	Carnegie-Mellon	Chicago
97	Felix, W. L.	11	6.3	Ohio State	Arizona
98	Larcker, D. F.	11	6.2	Kansas	Pennsylvania
99	Danos, P.	11	5.7	Texas	Michigan
100	Dopuch, N.	11	5.3	Illinois	Washington University
101	Covaleski, M. A.	11	5.0	Penn. State	Wisconsin
102	Neter, J.	11	4.1	Columbia	Georgia

[a] For retired authors, we list their last employer; for others, as indicated in Hasselback (1990) or CMG (1989).

The table reveals that there exists a high concentration of schools from which the top contributors received their doctorate degrees. Among the top 102 contributors, eight received their degrees from the University of Illinois, six each from Michigan State University and the University of Texas, five each from Ohio State University and the University of Chicago, and four each from the University of Michigan and Stanford University.[9] Note that seven schools produce more than one-third (i.e., 38) of the most prolific contributors. This result is consistent with the previous finding that there exists a high concentration of research output among the graduates of a small number of accounting programs. For example, Heck and Bremser (1986) report that the graduates of the top twenty-five U.S. schools account for 35.9 per cent of the articles published in *The Accounting Review* during the period 1966–85.[10]

The high contribution achieved by these graduate programmes in the production of outstanding researchers may be interpreted as evidence that these universities provide an educational environment for graduate study that is particularly favourable for the production of prolific scholars. It may also partially reflect the sheer size of these programmes. That is, the seven programmes (out of eighty-four graduate schools offering accounting PhD degrees) account for 23.1 per cent of all PhD graduates in the United States as of 1988.[11] Alternatively, it may partially reflect the fact that the reputations of those institutions enable them to attract graduate students with outstanding potential. It is natural for students to select the most prestigious graduate schools in the hope that their graduate market prospects will be enhanced.[12]

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[9] When we adjust the size of program by dividing the number of top (102) scholars from each school by the number of PhD graduates from each school, the top-seven programs are Carnegie-Mellon (0.167), Purdue (0.133), Rochester (0.100), Chicago (0.085), Cornell (0.083), Maryland (0.082) and Stanford (0.075), where numbers in brackets are the numbers of top 102 scholars per graduate. See also Brown and Gardner (1985a) for rankings of accounting programs upon citations.

[10] A similar observation has been reported in other academic literature. For example, Hirsch, Austin, Brooks and Moore (1984) report that the top twenty-five schools account for 55 per cent of total published pages in the twenty-four leading economics journals during the period of 1974–83. Moreover, Hogan (1986) reports that the combined total graduates of the top four graduate programs account for 43 per cent of the total pages in three leading economics journals for the period 1970–79.

In contrast to the high concentration of the origins of their doctorate degrees, current affiliations of the top scholars are less concentrated. For instance, the top seven universities that produced the most prolific authors have only eight of the top 102 contributors.

Finally, since different journals have different objectives and the amount of time and effort required to prepare an article differs among journals, we also present in Table 4 the most prolific authors in each of the individual journals. Since the quality of articles published in a journal would be more homogeneous than the quality of articles published in a cross-section of journals, the rankings presented in Table 4 may be a more accurate representation of the relative performance of individuals.

TABLE 4

MOST PROLIFIC AUTHORS IN 14 MAJOR ACCOUNTING JOURNALS
FOR THE PERIOD 1968–88

ABA	
Chambers, R. J.	19
Ma, R.	9
Walker, R. G.	7
Peasnell, K. V.	5
Wells, M. C.	5
Ashton, R. K.	4
Clarke, F. L.	4
Findlay, M. C.	4
Nichols, D. R.	4
Smith, R. G. E.	4
Sterling, R. R.	4
Whittred, G. P.	4
14 authors	3
40 authors	2
180 authors	1
JAAF	
Ronen J.	5
Sorter, G.	5
Raman, K. K.	4
Young, A. E.	4
Bierman, H.	3
Dirsmith, M. W.	3
Gamble, G. O.	3
Gormley, R. J.	3
Ingberman, M.	3
Kostolansky, J.	3
Lembke, V. C.	3
Schwartz, B. N.	3
Werner, C.	3
Wiesen, J.	3
32 authors	2
247 authors	1
AOS	
Birnberg, J. G.	11
Dirsmith, M. W.	9
Flamholtz, E. G.	9
Shields, M. D.	9
Cooper, D. J.	8
Ferris, K. R.	8
Hopwood, A.	8
Boland, R. J.	6
Covaleski, M. A.	6
Schreuder, H.	6
Tomkins, C.	6
4 authors	5
11 authors	4
16 authors	3
66 authors	2
293 authors	1
AJPT	
Reckers, P. M. J.	7
Mock, T. J.	5
Bailey, A. D.	4
Pany, K.	4
Wright, A.	4
Blocher, E.	3
Hansen, J. V.	3
Krosstad, J. L.	3
Messier, W. F.	3
Neter, J.	3
Willingham, J. J.	3
30 authors	2
132 authors	1
AR	
Demski, J. S.	15
Abdel-Khalik, A.	14
Revsine, L.	13
Bierman, H.	11
Ijiri, Y.	11
Kaplan, R. S.	11
McKeown, J. C.	11
Ashton, R. H.	10
Petri, E.	10
Beaver, W. H.	9
Deakin, E. B.	9
Kinney, W. R.	9
Weil, R.	9
Bailey, A. D.	8
Chow, C. W.	8
Copeland, R. M.	8
Crumbley, D. L.	8
Lev, B.	8
Ronen, J.	8
Strawser, R. H.	8
Smith, C. H.	8
Weygandt, J. J.	8
14 authors	7
16 authors	6
29 authors	5
53 authors	4
95 authors	3
231 authors	2
770 authors	1
IJAER	
Ameiss, A. P.	5
Choi, F. D. S.	5
Jaggi, B.	5
Smith, C. H.	5
5 authors	4
19 authors	3
56 authors	2
350 authors	1
ABR	
Lee, T. A.	17
Peasnell, K. V.	10
Grinyer, J. R.	9
Bhaskar, K. N.	8
Parker, L. D.	8
Yamey, B. S.	8
Buckley, A.	7
Ma, R.	7

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[11] As of 1988, the total number of accounting PhD graduates produced in the United States is 3,968. For the same period, the top seven programs accounted for 915 graduates (see Hasselback, 1990).

Table 4 (contd)

Whittington, G.	7
Ashton, R. K.	6
Morris, R. C.	6
Nobes, C. W.	6
Pike, R. H.	6
7 authors	5
19 authors	4
29 authors	3
75 authors	2
357 authors	1
JAR	
Gonedes, N. J.	12
Copeland, R. M.	11
Demski, J. S.	11
Ohlson, J.	11
Kinney, W. R.	10
McKeown, J. C.	10
Abdel-Khalik, A.	9
Beaver, W. H.	9
Hopwood, W.	9
Kaplan, R. S.	9
Lev, B.	9
Ronen, J.	9
Sunder, S.	9
Ijiri, Y.	8
Libby, R.	8
Ashton, R. H.	7
Ingram, R. W.	7
Verrecchia, R. E.	7
Ball, R.	6
Biddle, G. C.	6
Brief, R. P.	6
Brown, L. D.	6
Dopuch, N.	6
12 authors	5
21 authors	4
50 authors	3
106 authors	2
459 authors	1
JAE	
Beaver, W. H.	6
Griffin, P. A.	5
Leftwich, R.	5
De Angelo, L. E.	4
Hagerman, R. L.	4
Holthausen, R.	4
Verrecchia, R. E.	4
Zmijewski, M. E.	4
Christie, A. A.	3
Collins, D. W.	3
Lambert, R.	3
Landsman, W.	3
Smith, D. B.	3
Zimmerman, J. L.	3
17 authors	2
101 authors	1
CAR	
Smieliauskas, W.	5
Amershi, A. H.	3
Balachandran, B.	3
Feltham, G. A.	3
Thornton, D. B.	3
25 authors	2
99 authors	1
JAPP	
Loeb, S. E.	6
Gordon, L. A.	5
Giroux, G. A.	4
Marks, B. R.	4
Raman, K. K.	4
Benston, G. J.	3
Ingram, R. W.	3
Stark, A. W.	3
11 authors	2
135 authors	1
JAL	
Solomon, I.	3
Beck, P. J.	2
Frecka, T. J.	2
80 authors	1
JAED	
Stout, D. E.	4
Baldwin, B. A.	3
Chow, C. W.	3
Frakes, A. H.	3
Friedlob, G. T.	3
27 authors	2
259 authors	1
JBFA	
Findlay, M. C.	12
Barnes, P.	8
Keane, S. M.	7
Peasnell, K. V.	7
Skerratt, L. C. L.	7
Williams, E. E.	7
Belkaoui, A.	6
Grinyer, J. R.	6
Jarrett, J.	6
Laughlin, R.	6
Lee, T. A.	6
Pope, P. F.	6
Saunders, A.	6
Scapens, R. W.	6
Ward, C. W. R.	6
Wilkes, F. M.	6
Woodward, R. S.	6
Bhaskar, K. N.	5
Ezzamel, M. A.	5
Morris, M. H.	5
Vickrey, D. W.	5
17 authors	4
39 authors	3
112 authors	2
439 authors	1

LOTKA'S LAW: TESTS AND FINDINGS

For the case of Lotka's Law (i.e., c=2 in equation (2)), the theoretical frequency distribution can be determined as follows. First note that:

$$\sum_{i=1}^{\infty} a_i = a_1 \sum_{i=1}^{\infty} \frac{1}{i^2} \qquad (3)$$

However, we know:

$$\sum_{i=1}^{\infty} \frac{1}{i^2} = \frac{\pi^2}{6} \qquad (4)$$

Therefore, the proportion of all contributors publishing a single paper should be:

$$a_1/a_1(\sum_{i=1}^{\infty}\frac{1}{i^2}) = \frac{6}{\pi^2}\ 0.6079 \tag{5}$$

Likewise, the proportions of authors publishing two, three, ... , and *n* papers should be:

$$a_2/a_1(\sum_{i=1}^{\infty}\frac{1}{i^2}) = \frac{6}{\pi^2}\frac{1}{2^2} = 0.152, \tag{6}$$

$$a_3/a_1(\sum_{i=1}^{\infty}\frac{1}{i^2}) = \frac{6}{\pi^2}\frac{1}{3^2} = 0.0675, \text{ and} \tag{7}$$

$$\vdots$$

$$a_n/a_1(\sum_{i=1}^{\infty}\frac{1}{i^2}) = \frac{6}{\pi^2}\frac{1}{n^2} \tag{8}$$

The last two rows in Table 2 compare the theoretical and actual frequency distributions of publication for all fourteen journals as a whole. Although Lotka's Law gives a fairly good fit to actual frequency distribution, the theoretical (i.e., Lotka's) frequency tends to be too high for $n=1$ and too low for $n\geq 2$, indicating that the value of the exponent (i.e., c) is somewhat less than the value predicted by Lotka's Law (i.e., 2). In order to test whether or not Lotka's Law applies to the observed data, we performed the chi-square goodness-of-fit test. The computed chi-square statistic is 58.88, whereas the critical value with α = 1 per cent from the chi-square table is 23.2.[13] Thus, Lotka's Law does not describe the frequency distribution of the publications in the accounting literature as a whole. It tends to underestimate the proportion of authors with multiple publications and to overestimate the proportion of one-time authors.

When applied to individual journals, however, Lotka's Law indeed describes the actual frequency distribution for some journals. Table 5 presents the results of

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[12] Even after the adjustment of the size of program, we found that five (i.e., Chicago, Stanford, Ohio State, Michigan State and Michigan) out of these seven programs are among the top fifteen size-adjusted accounting programs.

[13] Since Lotka's Law has repeatedly been hypothesized and tested in other academic fields, and since the aim was to examine whether it *also* applies to the accounting literature, Lotka's Law was treated as the null hypothesis. A small (i.e., 1 per cent) significance level was used so as not to erroneously reject Lotka's Law (which has been shown to hold in some other academic fields) when it is valid in the accounting field.

the chi-square test for each journal. Among fourteen journals, seven journals (i.e., *Abacus*, *Accounting and Business Research*, *The Accounting Review*, *Auditing: A Journal of Practice and Theory*, *Contemporary Accounting Research*, *Journal of Accounting and Economics*, and *Journal of Accounting Research*) conform to Lotka's Law at a significance level of 1 per cent.[14] Since a cursory look at those journals reveals that some of them are relatively older journals compared to other journals in the sample, we performed a t-test to determine whether the average age of those journals is significantly greater than that of other journals. The calculated t-statistic (1.269) indicates, however, that they are not statistically different at the 1 per cent significance level.[15] This result implies that the age of journals does not have a significant effect on the validity of Lotka's Law in the accounting literature.

TABLE 5

TESTING LOTKA'S AND THE GENERALIZED LOTKA'S LAWS FOR INDIVIDUAL JOURNALS

(Lotka's Law states that the number of authors publishing n papers is $1/n^2$ of those publishing one paper and the generalized Lotka's Law states that $a_n = a_1/n^c$, where a_n is the number of authors publishing n papers, a_1 is the number of authors publishing one paper, and c is a constant

	χ^2	Generalized Lotka's Law				
	statistics	$\mathrm{Log}(a_n/a_1) = \alpha + \beta\mathrm{Log}(n) + e$				
Journal	for Lotka's Law	Fitted α	(t-value)	Fitted β[a]	(t-value)	Adj. R^2
ABA	10.03[b]	–0.445	(–0.864)	–2.006	(–6.678**)	0.862
ABR	16.12[b]	0.222	(1.080)	–2.579	(–20.900**)	0.980
AOS	18.78	–0.123	(–0.504)	–2.252	(–15.136**)	0.967
AR	22.42[b]	0.419	(1.453)	–2.449	(–14.121**)	0.957
AJPT	13.13[b]	0.100	(0.321)	–2.752	(–11.388**)	0.963
CAR	9.43[b]	0.202	(0.604)	–2.936	(–9.093**)	0.965
IJAER	45.34	0.071	(0.349)	–2.887	(–15.387**)	0.984
JAAF	46.18	0.056	(0.191)	–3.168	(–11.927**)	0.973
JAE	7.24[b]	–0.005	(–0.026)	–2.450	(–15.199**)	0.979
JAED	66.42	0.174	(0.635)	–3.991	(–13.818**)	0.985
JAL	30.01	–0.222	(–0.312)	–4.132	(–4.352)	0.900
JAPP	31.52	–0.312	(–0.920)	–2.745	(–10.124**)	0.953
JAR	21.18[b]	0.118	(0.329)	–2.395	(–11.130**)	0.932
JBFA	30.93	0.231	(0.562)	–2.626	(–10.337**)	0.930
All journals	58.88	0.105	(0.876)	–1.929	(–26.792**)	0.988

[a] Note that β is the estimate of –c.

[b] Consistent with Lotka's Law at α = 1 per cent.

** Statistically significant at the 1 per cent level.

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[14] This result is different from the findings of Radhakrishnan and Kernizan (1979) and Subramanyam (1979). Radhakrishnan and Kernizan find that Lotka's Law, when applied to individual journal data, does not adequately describe the computer science literature. Subramanyam, however, shows that the computer science literature does conform to Lotka's inverse square law if data are taken from a large collection of journals.

GENERALIZED LOTKA'S LAW AND AUTHOR CONCENTRATION

In this section we test whether the generalized Lotka's Law is an adequate description of the empirical distribution of research output. For this, note first from equation (2) that:

$$a_n/a_1 = 1/n^c. \tag{9}$$

Taking the log of both sides of (9), we obtain:

$$\text{Log}\,(a_n/a_1) = -c\text{Log}(n). \tag{10}$$

The generalized Lotka's Law can be tested by running the following regression with a constant term α using the empirical frequency distribution shown in Table 2.

$$\text{Log}\,(a_n/a_1) = \alpha + \beta\text{Log}(n) + e. \tag{11}$$

If the generalized Lotka's Law is valid, the intercept α in (11) will be zero. Thus a direct test of the generalized Lotka's Law can be performed by estimating (11) for each journal and for all journals as a whole and testing whether α is significantly different from zero.

The regression results are presented in Table 5. The table presents fitted values of α and β with their respective t-values and coefficients of determination for each individual journal and for all journals as a whole. The explanatory power of equation (11) is very high for both individual journals and all fourteen journals as a whole. For the majority of journals, the generalized Lotka's Law provides an excellent fit. For thirteen out of fourteen journals, the generalized Lotka's Law explains more than 90 per cent of the empirical distribution of publication patterns. Notice also that the model gives almost a perfect fit ($R^2 = 0.988$) when it is applied to all journals as a whole. It is an impressive result considering that we are using a very simple model with only one parameter. Furthermore, all of the estimated intercept terms are not statistically different from zero at the 1 per cent significance level. In sum, it can be said that the generalized version of Lotka's Law, that is, $a_n = a_1/n^c$, is an excellent description of the empirical distribution of the patterns of research output in the accounting literature.[16]

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[15] The t-statistic is calculated using the following formula (see Mood, Graybill and Boes, 1974, p. 435):

$$t = \frac{(MY_1 - MY_2)\sqrt{n_1 n_2/(n_1 + n_2)}}{\sqrt{\{\Sigma(Y_1 - MY_1)^2 + \Sigma(Y_2 - MY_2)^2\}/(n_1 + n_2 - 2)}},$$

where Y_1 = the age of the journals for which Lotka's Law holds;
Y_2 = the age of the journals for which Lotka's Law does not hold;
n_1 = the number of journals for which Lotka's Law holds;
n_2 = the number of journals for which Lotka's Law does not hold;
MY_1 = the mean value of Y_1; and
MY_2 = the mean value of Y_2.

[16] The so-called Price Law (which states that the top $\sqrt{P}$ authors will produce at least half of the total papers published by the populaton of P authors) was also tested (see Price 1963, 1976). Our

Finally, since the intercept term in (11) is not significantly different from zero, better estimates of the exponent c are obtained by estimating the regression equation forcing the intercept term to be zero.

$$\mathrm{Log}(a_n/a_1) = \beta \mathrm{Log}(n) + e. \qquad (12)$$

The results are presented in Table 6. For all fourteen journals as a whole, the estimated exponent is 1.872. For individual journals, the estimated exponents range from 2.220 for *The Accounting Review* to 4.368 for *Journal of Accounting Literature*. As in Table 5, the generalized Lotka's Law provides almost a perfect fit for the majority of journals — the R^2 values range from 0.966 to 0.996. Also, all journals have exponents greater than two, indicating that the degree of author concentration for individual journals is less than that predicted by the original Lotka's Law (i.e., two). On the other hand, the degree of author concentration for all fourteen journals as a whole is greater than that predicted by the original Lotka's Law. The ranking of author concentration based upon estimated exponents (i.e., the larger c indicates the lower rank) confirms our earlier observation that the journals with the highest concentrations among their contributors are *The Accounting Review, Abacus*, and *Journal of Accounting Research*. As discussed above, this may reflect the fact that both *The Accounting Review* and *Journal of Accounting Research* have existed for longer periods than other journals and thus many writers have had the opportunity to publish more than once[17]; or, perhaps, that the phenomenon 'success breeds success' is more common in higher quality publications.[18] On the other hand, the higher concentration among the contributors for *Abacus* may reflect either the length of existence of the journal or the specialized nature (i.e., historical and descriptive perspective of accounting theory and practice) of this journal.

On the other hand, the authors publishing in *Journal of Accounting Education* and *Journal of Accounting Literature* are least concentrated. This may reflect the youth of these journals, which began publication only in 1983 and 1982, respectively. Because of such a short period of existence, few authors have had the chance to have multiple publications in these journals.

SUMMARY AND CONCLUDING REMARKS

This study examines whether any bibliometric regularity exists in the accounting literature. Our empirical results strongly suggest that the number of authors publishing n papers is about $1/n^c$ of those publishing one paper. Also, the value of the exponent (i.e., c) is 1.872 if data are taken from a large collection of journals.

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empirical results indicate that the top $\sqrt{P}$ authors vastly under-published compared to the prediction made by the Price Law. Thus the actual degree of author concentration is not commensurate with the expected result suggested by the Price Law.

[17] The Spearman rank correlation between the author concentration and the age of journals is 0.749.

[18] The reputation of these journals is well known (see footnote 5 above).

TABLE 6

THE GENERALIZED LOTKA'S LAW AND AUTHOR CONCENTRATION RANKING

Journal	Generalized Lotka's Law $\text{Log}(a_n/a_1) = \beta\text{Log}(n) + e$			
	Fitted β	(t-value)	Adj. R^2	Ranking of author concentration
ABA	-2.231	(-15.148**)	0.966	2
ABR	-2.458	(-47.195**)	0.996	6
AOS	-2.330	(-36.864**)	0.993	4
AR	-2.220	(-28.878**)	0.988	1
AJPT	-2.685	(-24.862**)	0.990	8
CAR	-2.776	(-17.011**)	0.986	9
IJAER	-2.832	(-34.451**)	0.996	10
JAAF	-3.124	(-26.447**)	0.993	12
JAE	-2.453	(-35.230**)	0.995	5
JAED	-3.838	(-27.089**)	0.995	13
JAL	-4.368	(-10.268**)	0.972	14
JAPP	-2.963	(-22.982**)	0.989	11
JAR	-2.319	(-27.285**)	0.987	3
JBFA	-2.498	(-23.194**)	0.984	7
All journals	-1.872	(-62.978**)	0.998	

** Statistically significant at the 1 per cent level.

For individual journals, the best fitted values of the exponent range from 2.220 to 4.368. The compilation of doctoral origin of the most prolific authors reveals that seven U.S. programmes account for more than one-third of the most prolific scholars, indicating strong institutional dominance.

Some important caveats are in order. The rankings of individuals and institutions presented in this study may not reflect the true contributions of individuals or institutions. Any such evaluation would have to go beyond the counting of articles in a selected number of journals. The type of articles published in *The Accounting Review*, for example, is quite different from that of articles published in the *Journal of Accounting Education*. The research skills required to publish an article in the *Journal of Accounting Research* will, on average, be substantially different from those required to publish in *Accounting and Business Research*. Since this study made no attempt to assess the quality or length of articles or their contribution to the accounting literature, the rankings presented in this study should be interpreted with some caution. It would be safe to say that the rankings presented in this paper reflect the most frequent contributors in the past and provide some indication regarding the publication pattern among individuals in the future. For example, this study predicts that less than 4 per cent of all publishing accounting researchers are likely to publish ten or more papers in those journals for the next twenty years, and less than 0.5 per cent are likely to publish twenty or more papers.

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PETER WALTON

Harmonization of Accounting in France and Britain: Some Evidence

The European Community's accounting harmonization initiative is intended to create harmonized reporting by Community companies. If the Community's programme is successful, measurement practices in each member state should be such that the same transactions receive broadly comparable treatment irrespective of the country where the accounts are prepared. This study sets out to test whether this is the case in France and Britain and the application of the Fourth Directive, and whether in practice there is any consensus even *within* each jurisdiction. An empirical test for harmony and uniformity is made by asking accountants within each jurisdiction to compile financial statements from a common set of data.

The results of the test show that in this sample there is relatively little harmony within each national group, let alone between one jurisdiction and another.

Key words: Accounting policies; Standardization; Uniform system of Accounts.

The regulation of external financial reporting has been and is still undergoing considerable revision in each member state of the European Community as a result of the European Commission's attempts to create a harmonized corporate environment within the Community. These changes are intended, amongst other objectives, to facilitate the creation and operation of a Community-wide capital market by providing accounting reports prepared on a comparable basis by all companies within the community.

A major component in the harmonization programme is the Fourth Directive which laid down valuation principles and rules for the form and content of company accounts. This directive specified that the overriding objective of company accounts is to give a 'true and fair view' of the financial state of affairs of the company.

Prima facie, if the European Community's harmonization efforts were successful, a German company having identical assets and trading activities as, say, a Belgian company would produce broadly similar accounts — the profit measurement would correspond, and asset values would be similar: the true and fair view given in Germany would be the same as the true and fair view given in Belgium. However, extant literature (e.g., Busse von Colbe, 1983; Simmonds and Azieres, 1989) shows that there are diverse accounting traditions within Europe and it is not to be expected that those differences will evaporate overnight. Furthermore, it is far from self-

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evident that accountants working within the same jurisdiction would necessarily be uniform in their approach to any particular set of measurement problems.

The Fourth Directive was adopted in Britain in 1981 and in France in 1982, for implementation from January 1984. Therefore since 1984 both French and British accountants are supposed to have prepared (harmonized) accounts which give a true and fair view. The research which is presented below tests: (a) whether accounting principles are applied relatively uniformly in each jurisdiction; and (b) whether, post-harmonization, the application of generally accepted accounting principles (GAAP) in one jurisdiction leads to a financial report which is comparable with that in the other.

In the context of international accounting research, very little empirical work has been done to quantify international differences, and the work that has been done in this area has been based on the assumption that accounting measurements are uniform within each country. The intention in this paper is to provide more evidence on the application of accounting principles by accountants in different jurisdictions and provide an example of a kind of empirical test which has not previously been used in international accounting research.

In the context of the wider world of international accounting, the test reported here provides evidence which may be useful to both users and regulators in demonstrating that harmonization of the form of financial statements is of little use if measurement rules are not also harmonized.

HARMONIZATION

The formal justification for accounting harmonization within the European Community is usually derived from the fundamental principle of the Market that there should be freedom of establishment for business enterprises throughout the Community. That freedom requires that there should be relative uniformity of Company Law (van Hulle, 1986).

In practical terms this translated into a desire on the part of the European Commission to avoid two problems (Coleman and Petite, 1983): first, to avoid having, in different member states, 'widely differing, or worse, contradictory reporting and disclosure requirements'; and second, to avoid competition between member states to act as a base for companies.

An advantage of harmonization, which is cited by those in favour of it, is the possible improvement to the functioning of the international capital markets. For example, Lord Benson, the founding chairman of the International Accounting Standards Committee said (1981, p. 28): 'We trade across national frontiers and the exchange of goods and services is international. If a multinational company is listed on the bourses of the free world or is raising money on world markets, there should be some yardstick, known to the public, by which its operations can be judged.'

Although these advantages are cited for international harmonization, it is not certain that they would automatically accrue to harmonization restricted to the subset which the European Community forms of the developed world. Nonetheless, Coleman (1984, p. 4) claims them for EC harmonization: 'From the early days of the company law programme the European Federation of Assocations of Financial Analysts has...supported the Commission's proposals as a necessary and appropriate solution to the problems experienced daily by companies' shareholders, clients, suppliers, bankers (actual and, more important from the point of view of development of the Community, potential)', and 'from the perspective of the enterprises themselves...divergent reporting and accounting requirements create obvious difficulties'.

What is not clear, and indeed is extremely difficult to define, is what degree of uniformity is implied by the term 'harmonization' as used by the European Commission. Tay and Parker (1990, p. 73) define the situation as follows: 'harmonization (a *process*) is a movement away from total diversity of practice. Harmony (a *state*) is therefore indicated by a "clustering" of companies around one or a few of the available methods'. They contrast this with standardization, which they identify with uniformity.

The idea of encouraging a clustering of practices seems to fit with the Commission's objectives, cited above, of avoiding 'widely differing' reporting practices. How close a clustering would constitute successful harmonization is subjective. However, the Commission's related objective, also cited above (Coleman 1984), of providing comparable accounts for users, could be used to extend the definition of EC harmonization: 'to create a clustering of practices which is sufficiently close that investors and creditors would reach the same investment and credit decisions concerning a company, whichever set of member state accounting rules were followed'.

The first major part of the Commission's accounting harmonization initiative was the Fourth Directive. The preamble to the Directive (78/660/EEC) refers to 'co-ordination of the national provisions concerning the presentation and contents of annual accounts and reports, methods of valuation and publication'. Apart from its detailed provisions, the Directive requires that '(2.3) The annual accounts shall give a true and fair view of the company's assets, liabilities, financial position and profit or loss'.

Once member states had enacted these requirements in their own statutes, should it be expected that accounting measurements would indeed be sufficiently close to be comparable? An outright rejection of the possibility of harmonization is made by Busse von Colbe (1983). He identifies five barriers to harmonization including, first of all, absence of agreement on optimal reporting practice: 'different weights are given to the various goals of accounting in the different countries joined together in the harmonization efforts'. Since there is no agreed objective for corporate reporting, it is impossible to decide in what direction harmonization should move.

Gray (1980, p. 74) was also sceptical:

> it would seem that success will require careful consideration of the differential influence of the various user groups interested in company accounts in each of the countries concerned. A uniformity of general accounting principles, especially the fundamental conservatism or prudence principle, can only give a false sense of progress when what is significant is the way in which such a principle is applied. Until there is a more rigorous and common approach to the treatment of items such as provisions, reserves, extraordinary

> and exceptional gains and losses, stock valuation and depreciation, harmonization will be an illusion. Indeed the EEC's Fourth Directive is in danger of becoming just such an example of harmonization at the superficial level.

It seems that commentators were sceptical as to the degree of harmonization which could be achieved, given the wide divergence of existing practices in member states and the different perceived objectives of reporting. France and Britain both adopted the Fourth Directive in the early 1980s, Britain with the 1981 Companies Act and France with its 1983 Accounting Act and implementing Decree. Accordingly they provided an opportunity for observing what degree of harmony had been achieved in the operationalization of the Fourth Directive, and to what extent the Directive's 'true and fair view' was comparable between the two jurisdictions.

EMPIRICAL RESEARCH

The related research objective was to devise an appropriate empirical test. The international accounting literature is very short of such research and provides few models. There are two existing major empirical studies which have set out to identify and quantify transnational measurement differences (Davidson and Kohlmeier, 1966; Gray, 1980), in contrast to those which have examined disclosure differences, such as Choi (1973) and Barrett (1977). The measurement studies have attempted to resolve the practical problems in different ways. Gray based his study on published financial data and attempted to evaluate the degree of conservatism between British, French and German measurements. His method was to compare the reported profits with an adjusted profits measurement calculated using a method standardized by the European Federation of Financial Analysts Societies (EFFAS).

As Gray points out (1980, p. 66), the EFFAS adjustments are made without any knowledge of the underlying data and

> can only remove the impact of some of the more obvious differences in accounting treatment and are thus likely to provide a somewhat modest assessment of the full position. But the EFFAS method does provide a common yardstick, for comparative purposes, which is perceived to be of significance to security analysts in the process of making investment decisions.

Another disadvantage is that the EFFAS method may be seen simply to replicate any bias which is built into the European analysts' system: for example, the standard adjustments generally involve removing (Gray, 1980, p. 66) 'any provisions which are of a purely expectational nature or which are designed mainly to obtain short term tax advantages'. One might therefore expect that generally the EFFAS method would produce higher profits than those reported where such tax manipulation is commonplace, as in France and Germany at that time.

The alternative to using published data is to formulate some type of simulation and one example of the approach was provided by Davidson and Kohlmeier (1966) and extended by Abel (1969). The original study was a computer simulation of the results which would have been reported by two U.S. companies had their accounts been prepared according to British, French, Dutch or Swedish GAAP, while Abel extended the process to include Germany. The experiment involved ascertaining, by means of interviews and library research, the 'best practice' in each of the jurisdictions concerned as related to the accounting decisions in the model. This 'best practice' was then built into the computer to provide five years' results for each company according to each set of GAAP, enabling an analysis to be made of the resulting measurements.

The disadvantage of this approach, as with Gray's method, is that it relies on building in a set of adjustments and the effect of these is then systematically to provide a different result. The research evidence is in the construction of the adjustment while the empirical results are simply illustrative of the adjustment. The adjustment was in fact constructed by Davidson and Kohlmeier and involved making decisions about which practices to adopt: 'the answers from respondents within a country were sometimes contradictory. *It became clear that accounting procedures within a country were rarely uniform*; thus the procedures specified here are those which, *in our judgment*, are most commonly used within each country' (p. 186, emphasis added). Inevitably the methodology excluded any possibility of measuring variability of accounting practice.

Both Gray's approach and that of Davidson and Kohlmeier depend upon a single uniform approach to GAAP and do not therefore offer the possibility of observing variability within each jurisdiction and will produce results which replicate the prior judgments involved in constructing the model.

In order to overcome these difficulties a research method was developed which would allow a test of both uniformity within each jurisdiction about the application of GAAP and comparability between jurisdictions. The approach consisted of preparing a hypothetical set of data and presenting accountants in each country with that data and asking them to prepare financial statements in accordance with domestic GAAP which reflected those transactions.

A possible disadvantage is that respondents are aware that the data are artificial and that there is no practical outcome from the accounting decisions taken: therefore there is a risk that the results produced will not be those which would have been produced under real-life conditions. However there is a major advantage of using artificial data in that all respondents can be faced with precisely the same decisions and therefore the outcomes can be compared directly and the decisions analysed in detail.

The nature of this type of research is such that the sample will be small: the task to be performed by participants takes some time to complete and individuals must be approached personally by the researcher. Equally, the size will dictate the nature of subsequent statistical analysis.

PREDICTED OUTCOMES

Both Busse von Colbe (1983) and Burggraaff (1983) draw attention to the difference in perceptions of the purposes of accounting statements in different countries within the European Community and claim that even if some degree of harmonization is achieved by the company law directives, underlying attitudes to measurement will remain different.

The conventional wisdom about French accounting is that measurement has been dominated by tax considerations and therefore profit minimization (e.g., see Beeny, 1976; Nobes, 1984). The more conservative measurement is confirmed by the Davidson and Kohlmeier and Gray studies. An analysis of pressures which may influence accounting in France (Scheid and Walton, 1988) suggests that from the mid-1960s there was a movement away from a tax orientation. However, this could only manifest itself initially through the publication by some companies of secondary annual reports using foreign or hybrid GAAP.

This pressure may have made acceptance of the Fourth Directive easier, but it remains open to question whether attitudes at the operational level would change very quickly. d'Illiers (1984, p. 405) observed: 'the chances of... a change in the habits of French accountants within a short period are too slight for the users of accounts, shareholders, bankers and others, to expect the income statement in itself to provide a current result which will be a good forecasting instrument'. In general one would expect that the application of French accounting principles would provide a more conservative measure of profit than the British, even after implementation of the Fourth Directive.

The question of the degree of uniformity of measurement within a jurisdiction has not been widely explored, although Nobes and Parker (1985, p. 75) suggest that French accounting measurements would be more uniform than British, a view supported by Oldham (1987, p. 157). British accountants such as Benson (quoted in Stamp, 1973, p. 10) have laid claim to a tradition of accountants exercising a high degree of individual judgment which might be presumed to lead to less uniformity.

CASE STUDY

In preparing the case study to be submitted to the sample, the intention was to strike a balance between areas where accounting regulations in the two countries are known to be different, and accounting areas where the same choices are available in both countries. The first set of decisions should be incorporated in order not to gloss over well-established differences in GAAP which must carry over into the financial statements (such as tax-oriented depreciation, or treatment of leased assets). The second set is required to test whether, given the same choice, there is any noticeable national pattern in final decisions made. At the same time it was necessary to select choices which, as far as possible, were not interdependent.

The following items were selected:

Areas where both countries have choices
- fixed assets: determination of cost, depreciation;
- treatment of government grants;
- stocks and work in progress;

but not necessarily the same choices
- extraordinary items;
- treatment of items denominated in foreign currencies;
- translation of foreign subsidiaries.

Areas where practices are known to be different
- leased assets;
- deferred taxation.

The case used in the study was a construction company which during the year under review starts up an overseas subsidiary to carry out a long-term contract (the choice of a construction company was precisely so a long-term contract could be used). Participants were asked to prepare an income statement and balance sheet for (a) the overseas subsidiary, (b) the parent company, and (c) the group (but the results of the group exercise were not the subject of the research and are not reported here). The exchange rates and transaction data were provided in exactly the same way to both French and British participants, except that parent company data were expressed in francs or sterling as appropriate on the basis that F10 = £1.

The overseas subsidiary. The main accounting decision here concerns the treatment of a long-term contract: first, whether or not any profit should be taken on the contract, then on the treatment of work in progress and the payments received from the client. Additional issues were payments (in head-office currency) for management services and the use of leased plant.

The parent company. There were a number of decisions to be made within this area. The company faced a compulsory purchase of its premises, giving rise to a loss (should this be an extraordinary item?). It built new premises which were in part financed by a U.S. dollar loan (possible capitalisation of interest, treatment of exchange difference at year end). It arranged the sale and leaseback of some plant with a possible profit on disposal.

The draft version of the case study was reviewed by an accountant within each jurisdiction before being submitted to the sample group.

RESULTS

Actual responses can be categorised as in Table 1.

TABLE 1

CASE STUDY RESPONDENTS

	Practice capital	Practice provinces	Corporate preparers	Total preparers
France	7	5	3	15
Britain	6	6	3	15

The 'capital' practitioners were all drawn from firms in the top ten in size in each jurisdiction, while those in the 'provinces' were a mixture. The 'Corporate preparers' were all from multinational companies.

In terms of the accounting measurements, the treatment of the long-term contract in the foreign subsidiary provided considerable variability. Of the U.K. respondents, four took a profit, four recorded neither a profit nor a loss and seven recorded a loss on the first six months of the foreign contract (FC). The four profit-taking respondents showed some variety in their computation of profit: pre-tax profit varied between FC22,600 and FC46,983, with the differences relating to differing turnover figures rather than different costs, and springing therefore from different views about 'attributable profit' computations.

The seven loss-recognising respondents had a wider dispersion of results, between FC5,000 and FC156,095, although the higher loss figure may well be the result of a computational error and the intended result should in that case have been a loss of FC26,095. The highest loss recorded otherwise was FC81,082. For those respondents the base position was not to recognize any unrealized profit, and the differences arose out of different decisions as to which costs should be capitalized and carried forward, and which should be treated as a period expense.

The French respondents were divided more than two to one against recognizing an unrealized profit on the long-term contract, but the majority who did not take a profit were not uniform in their treatment or result. Four respondents recognized a profit and their actual figures were all computed on the same base (percentage of completion) with very similar results. However, of the rest, seven showed neither profit nor loss but four recorded a loss. The four losses all arose out of the unwillingness of the respondents to include in work in progress different cost elements. The range of results was from -FC16,670 to +FC46,054, the mode was a zero result.

In the parent company statements there was no single overriding issue. The compulsory purchase of the headquarters building could potentially have been treated as an extraordinary item in either jurisdiction. Two-thirds of the British respondents treated it as an extraordinary item, while all the French respondents did so (but all asset disposals are reported as extraordinary items).

Interest paid for finance for assets under construction is potentially available for capitalization in both countries, but only one British respondent and two French respondents took this route. Overall, the income statements tended to show a much greater degree of unanimity than for the subsidiary.

An analysis of the decisions available and the decisions taken is given in Table 2. In the six decisions where there is no choice, only one, the foreign exchange loss provision being charged to the profit and loss account, concerns a situation where the regulations are the same in both countries. The others deal with the treatment of finance leases, sale and leaseback, client advances under long-term contracts and charging additional depreciation in the extraordinary result. Clearly in circumstances which involve any of these accounting decisions, the accounting results in each jurisdiction will be systematically different.

TABLE 2

ANALYSIS OF MEASUREMENT DECISIONS

	Decision	Choice available	British results	French results
Subsidiary				
	Long-term contract:			
1a	Recognize profit	Yes	No (11)	No (11)
1b	Recognize loss	Yes	N/C	N/C
2a	Capitalize all costs	Yes	N/C	N/C
2b	Capitalize some costs	Yes	Yes (15)	Yes (15)
3	Turnover shown	Yes (B)	Yes (12)	Yes (15)
4	Offset client advance	No	Yes (15)	No (15)
5	Capitalize lease	No	Yes (14)	No (15)
Parent				
6	Compulsory purchase as extraordinary item	Yes (B)	Yes (10)	Yes (15)
	Government grant used:			
7a	— to write down asset	Yes (B)	Yes (12)	No (15)
7b	— as deferred credit	No (F)	No (14)	Yes (13)
8	Interest capitalized	Yes	No (14)	No (14)
9	U.S. $ at closing rate	Yes (F)	Yes (15)	Yes (15)
10	FX loss to P&L	No	Yes (14)	Yes (13)
	— in finance costs	No	N/C	Yes (13)
11	Lease profit to P&L in first year	Yes (F)	N/C	No (11)
12	Capitalize leaseback	No	Yes (15)	No (15)
	— at sale price	Yes (B)	Yes (13)	—
13	Tax depreciation in Extraordinary result	No	No (15)	Yes (15)

The decisions have been numbered on the basis of treating as one decison those which are interdependent, such as whether to capitalize all costs of the long-term contract or only some. This leaves thirteen independent decisions, of which six are in areas where the regulatory framework does not allow a choice for either group.

There were two decisions where the British accountants had a choice but the French had none: treatment of the government grant and recording turnover in the subsidiary. In the case of the government grant the British consensus was to write down the asset rather than treat the grant as a deferred credit, while the deferred credit approach is obligatory in France. The bulk of the British sample recognized turnover in the subsidiary and were therefore in agreement with the French sample.

In the five decisions where choices were available to both groups, the level of agreement was quite high: in four each group made the same decision, but in the fifth neither group was able to register a consensus. However, this fifth decision was the vexed question of which of the subsidiary's costs should be treated as work in progress, and the lack of agreement on this point combined with the relative importance to the example of the numbers involved meant that the final profit figures were affected substantially, giving the impression of much less unanimity.

STATISTICAL ANALYSIS

The small number of respondents (30) and the restrictions imposed by having only three results in the smallest subgroups limit the kinds of technique available.

The aims were to test for the degree of conservatism and the degree of variability. The comparison of the statistical mean of key elements of the financial statements of each group of responses provides some measure of conservatism by the groups as a whole, while the standard deviations of these measurements within groups shed light on the comparative degree to which measurements were clustered and the closeness of the consensus on a true and fair view of the transactions. It should be borne in mind, though, that the absolute amounts of variation are a function of the underlying data and slightly different data would have given rise to correspondingly smaller or larger variations.

Given that the original data assumed an exchange relationship of F10 = £1, the two sets of data can easily be converted to a uniform currency. However, tax differences will give rise to a systematic difference in after-tax profit measurements and net equity. Consequently the underlying data were adjusted to cancel out all tax deductions and a notional net equity figure recomputed — although the relationship between net profit and equity in this case is so close that in effect the adjusted equity figure is provided as an illustration only.

Turnover, total assets and net equity are all frequently used as indicators of size and, if measurement differences distort messages, then these indicators have significant impact on analysts' perceptions of a company. Since France has adopted the presentation of expenses by nature and British accountants typically use a presentation by function, the intermediate points between turnover and net profit before interest and tax are not directly comparable, but thereafter the profit and loss accounts can be compared on a line-by-line basis. The evidence so far (Giraud & Walton, 1990, pp. 24–5) shows that practice within the Community as a whole is divided on the presentation of the profit and loss account, and that is a clear case of a lack of harmony. However, if harmony is defined as providing figures enabling users to reach similar decisions, it could be argued that the intermediate margins given within the trading result are secondary as performance indicators. The accounting numbers which were selected for comparison in this study were the following: turnover, profit before interest and tax, interest charge, profit before tax, extraordinary items, profit after extraordinary items, total assets (net of depreciation), and net equity. Although the subsets within each group are small, the statistical means for those were also calculated (see Table 4).

For the subsidiary the data show that the British results are more widely divergent than the French, so in that case the expected result is achieved, but in terms of conservatism the French result is less conservative than the British. The British result contains at least one fairly extreme measurement which might be classed as an outlier, but even removing the outlier the mean result remains more conservative than the French. The actual degree of conservatism cannot, of course, be measured since the numerical differences are a function of the original data.

Table 3

OVERSEAS SUBSIDIARY

	British sample		French sample	
	Mean	*SD*	Mean	*SD*
Turnover	136,644	83,407	185,930	36,432
Profit before interest	(12,014)	50,759	12,793	23,357
Interest	(4,675)	5,619	(4,031)	1,654
Profit before tax	(16,689)	51,344	8,763	22,812
Total net assets	168,711	51,670	208,938	23,091
Net equity	2,711	51,256	28,763	22,812

Table 4

SUBSETS OF SUBSIDIARY RESULTS

	Capital	Providence	Corporate
British sample			
Turnover	158,487	108,972	148,304
Profit before tax	(8,574)	(44,746)	23,194
Total net assets	181,154	146,199	188,847
French sample			
Turnover	185,715	211,594	143,659
Profit before tax	1,794	27,109	(5,557)
Total net assets	201,794	227,637	194,443

On all three major size indicators — turnover, total assets and equity — the mean British result would suggest a smaller company than the mean French result. However, the degree of variability within the British result suggests that the mean does not of itself convey a representative image.

Within each group the sample is too small to draw generalizable conclusions, but it is interesting to note that the British corporate preparers produce the highest mean profit within the British group. The French corporate preparers show the lowest mean result (in fact a loss) of the French group, perhaps reflecting a continuing preoccupation with tax measurement.

Curiously enough, the results for the parent company suggest that, judged on the mean, the French and British measurements are broadly in line (see Table 5). However, the standard deviation for the French sample is higher on almost every measurement, implying that there is far more variability on the issues addressed in this part of the case study: there is not a clear consensus on the accounting measurement of these transactions from a French perspective.

TABLE 5

PARENT COMPANY

	British sample		French sample	
	Mean	*SD*	Mean	*SD*
Turnover	1,331,733	44,577	1,345,000	76,572
Profit before interest	340,340	28,012	352,598	78,076
Interest	19,478	10,374	33,692	19,950
Profit before tax	320,862	30,102	318,906	86,169
Extraordinary items	33,770	24,538	58,182	14,444
Profit after expenses	287,092	19,003	260,724	77,221
Total net assets	865,802	28,802	860,227	86,214
Equity	551,862	18,339	538,895	102,203

In terms of the overall conservatism there is little that can be deduced from a comparison of the mean. The profit before tax figure is most closely comparable in its make-up and the two sets produce nearly identical mean calculations here. The French measure of extraordinary items is significantly higher, but this reflects the incorporation of the tax-driven depreciation at that point. Consequently one may say that the French measurement after extraordinary items does give a more conservative profit, thus confirming Gray (1980) and Davidson and Kohlmeier (1966), but that profit on ordinary items before tax is comparable.

The measurement of total net assets is similar between the two sets, despite the difference in approach to lease capitalization, because the incidence of the leased assets is small in this case.

CONCLUSION

The study tests whether harmonized financial statements, which are the objective of the European Community's programme, result in comparable accounting measurements as between two jurisdictions within the Community. The study also sought to determine whether the application of GAAP is uniform within each jurisdiction. The broad conclusion which can be drawn from the empirical study is that there is relatively little uniformity or close consensus amongst either the British or French respondents in their measurement of the transactions contained in the case study, and also that there is some support for the notion that the French net profit measurement will usually be more conservative than the British.

However, there are difficulties about drawing conclusions which are too emphatic because of the small sample. The analysis of the results derived by comparing responses to the problems posed suggests a high level of agreement in the areas where choice is available. If one looks at the underlying transactions one can see that British respondents had considerable difficulties in dealing with the long-term contract problem in the subsidiary. Those difficulties manifested themselves in many different ways, thus providing a level of variability which was not replicated in the parent company transactions.

Looking at the most variable French result, the parent company throws additional light on the question posed here. There was significant disagreement between respondents about the rate of economic depreciation to be expensed. This had an impact both on the net profit measure and on total net assets. A uniform approach to depreciation would have provided lower standard deviations. The original data were intended to suggest an appropriate depreciation rate, albeit obliquely, but on the other hand there are well-established conventions in France as to the economic lives to be used and it is possible that the variability of rates used arises from different perceptions of economic depreciation.

At a detailed level the strongest conclusion which emerges is that, while there is some reasonable consensus about the net profit measurement, the precise way in which this is presented (the element which the directive was most likely to be able to address) still contains great scope for differences. This is obvious where there are systematic differences such as the treatment of assets held under finance leases, less obvious when it comes down to questions as to whether interest paid on loans to finance the construction contract should be treated as cost of sales in the subsididary and capitalized into work in progress or taken as a period expense into the subsidiary.

Variations in treatment within each jurisdiction are quite clear from the results, and it is by no means obvious that a user would obtain a greater consensus by comparing two reports from the same country with each other than by comparing one report from each country. Expressed in a different way, although the European Community's accounting harmonization programme has focused on improving comparability between states, the evidence suggests that accounting measurements are not uniform within individual states, let alone throughout the Community. It follows that if the European Community wishes to achieve a high degree of harmonization it will need to pursue this within each jurisdiction as well as on a Community-wide basis.

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A Field Study of the Review Process: Research Note

Despite the stated importance of the audit review process in auditing standards and textbooks, research on the process itself is limited. This study provides evidence on the nature and purpose of the review process by examining the actual review notes prepared by managers of a Big-6 accounting firm. A sample of twenty-eight audit engagements resulting in 3,008 separate review notes was examined. The results suggest that quality control aspects appear to be the main focus of the review process. Review notes sometimes indicated the need to gather further information and/or undertake additional testing, and provided direct as well as indirect advice on the audit approach to subordinates. Few surprises resulted from the review process, and the review notes and approaches varied among managers.

Key words: Auditing; Auditing procedures; Reviews.

Most public accounting firms have established well-defined procedures designed to ensure that work carried out by each auditor is reviewed by staff with equal or higher levels of experience. The current professional literature is replete with statements suggesting the importance of the review process in auditing (e.g., ICAEW, 1981, Section 3.201, paras 13, 14; *AUP 13*, 1983, paras 10, 11, 12; AICPA, 1985; *AUS 1*, 1991, paras 18, 19). In court cases (e.g., Pacific Acceptance *v.* Forsyth & Others; Cambridge Credit Corp. Ltd & Anor *v.* Hutcheson & Ors) the need for auditors to carefully review the work performed by subordinates has been noted.

The audit research literature and audit textbooks have also emphasized the importance of the review process. For example, Mautz and Sharaf (1961) state that the 'prudent practitioner will recognise the necessity for review of the work of his assistants and will perform such review with full understanding of its importance'. More recently, Arens and Loebbecke (1988) claim that working paper review is essential to evaluate performance of inexperienced staff, counteract possible audit bias, and ensure the firm's performance standards have been met. With respect to auditor judgments, Joyce (1976) suggests that the review process is designed

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to reduce judgment variance and Anderson (1977) considers that the review process is a means of minimizing the risk that 'judgmental decisions have been poorly made' (p. 469).

Yet an examination of the accounting literature reveals little research on, or discussion of, the review process itself. Bamber and Bylinski (1982) suggest 'there is very little descriptive research to tell us what the auditor does, why he does it, what his alternatives are, and what the consequences are'. Solomon (1987) notes the small number of empirical studies which even partially focus on the review process. Four of those studies examine the nature and purpose of the review process (Watson, 1975; Bamber and Bylinski, 1982, 1986; Cushing and Loebbecke, 1986) and four consider the effect of the review process (Bamber, 1983; Mock and Turner, 1981; Trotman, 1985; Trotman and Yetton, 1985).

Hence our main purpose is to provide additional evidence on the nature and purpose of the review process. A logical extension of the mainly survey-based work is to examine actual review notes prepared by managers of a Big-6 firm. This not only provides additional insights through an alternative approach but also allows consideration of actual behaviour instead of the suggestions of auditors or audit manuals.

Following the work of Libby (1981) and Wright (1988) it is suggested that descriptive research is one of the initial steps in developing and testing a theory on the role of review in the audit process. Consistent with Mintzberg (1979), we suggest that this form of 'direct' research can have certain advantages in discovering information about organizations, especially their control systems. It provides an alternative to the use of laboratory studies (see Trotman, 1985; Trotman and Yetton, 1985).

PREVIOUS STUDIES AND DESCRIPTIONS

Prior studies of the review process can generally be categorized as exploratory in nature. They have used questionnaires, interviews and detailed studies of firm manuals and documentation to find out more about the process. The main findings are that the review process is a means of supervision applied generally within audit firms (Watson, 1975); auditors vary in their beliefs about the nature and purpose of the review process (Bamber and Bylinski, 1982); and the primary difference between audit managers' review processes appears to lie in the extent to which various activities are performed (Bamber and Bylinski, 1986). Bamber and Bylinski (1982) concluded, on the basis of a series of interviews, that differences exist between firms. Cushing and Loebbecke (1986), on the other hand, reviewed firm manuals and reached the conclusion that the review process does not differ between firms.

Studies examining the outcome of the review process employed laboratory experiments dealing with the effect of the review on sample size selection, internal control evaluation and the estimated error in a population. Some studies found that the review process increased the level of consensus (Trotman and Yetton, 1985) and accuracy (Trotman, 1985). Furthermore, Bamber (1983) found that the behaviour of managers differed according to the credibility of the senior being reviewed.

A review of textbooks and firm-specific literature suggests that the review process acts as a means of quality control and supervision, ensuring both firm and professional standards have been met (Anderson, 1977; Taylor and Glezen, 1982; Grobstein, Loeb and Neary, 1985; Fraser and Aiken, 1986; Arens and Loebbecke, 1988; Willingham and Carmichael, 1988). More specifically, there are suggestions that the purposes of reviews are: (a) to assure completeness and adequate documentation to support audit work performed and conclusions reached (Anderson, 1977; Willingham and Carmichael, 1988); (b) to gain assurance that audit procedures have not been omitted, and work has been adequately performed in accordance with generally accepted auditing standards, including legal and regulatory requirements (Anderson, 1977; Willingham and Carmichael, 1988); (c) to check the mechanical accuracy of the workpapers, including indexing and cross-referencing (Willingham and Carmichael, 1988); (d) to ensure that inconsistencies in the workpapers have been eliminated and important conclusions have not been overlooked (Anderson 1977; Willingham and Carmichael, 1988); (e) to ensure management letter points and other important matters have been detected and reported to clients (Anderson, 1977); (f) to evaluate the performance of inexperienced staff (Arens and Loebbecke, 1988); and (g) to minimize the risk of making a judgmental error (Anderson, 1977).

The audit manual of the Big-6 firm whose review notes are examined in this study indicates that the general purposes of the review process are: (a) to determine whether the work performed under the circumstances is adequate, given the circumstances; (b) to ascertain whether the working papers are sufficient to support the opinion on the financial statements; and (c) to provide the final step in the supervision of all persons engaged in the audit and to enhance their professional education and development.

RESEARCH METHODS

Despite the sensitivity of the data in question, the Big-6 firm approached agreed to participate in the study. The firm does not use review notes as a basis of support for the work performed and destroys the review notes after all matters raised have been resolved to the satisfaction of the reviewer. This necessitated writing to the manager and partner responsible for each audit engagement, requesting that either originals or photocopies of all manager review notes be forwarded to one of the authors at the completion of each audit. An assurance of confidentiality was given to all participants, including the fact that all information would be aggregated with no reference to individuals, clients or any other identifying factor.

The Sample

The sample of audit review notes for analysis was selected from the firm's Sydney database. All clients having a December balance date were selected, thus ensuring a cross-section of audit managers' review notes. It was decided to eliminate audits for which budgeted hours of 200 or less had been indicated in the database. This cut-off was based on experience and discussions with audit personnel within the firm. Less than 200 hours is generally considered a relatively small client for which the review process may be somewhat informal, or may be performed directly by the 'partner-in-charge', resulting in limited documentation of the process. Additionally, all audits which did not involve the firm's normal processes and/or review procedures were not included in the sample. Such audits include 'not for profit' organizations, 'special' audits as the result of takeover bids, bonus issues and investigations. Finally, the sample was further reduced by ten because: (a) review notes were not received, and follow-up proved ineffectual (7); (b) the firm's database had not been updated for the loss of clients or a reduction in expected hours (2); or (c) a partner did not wish to take part in the study (1). A sample of twenty-eight audit engagements remained, resulting in 3,008 separate review points spread over thirteen audit managers.

A list was developed of the broad areas or issues raised in the review notes (letters 'A' through 'J' in Table 1). A preliminary sample of four sets of review notes was used to develop subcategories for each of the above. One additional classification category (F6 — workpapers missing) was added during the categorization process when it became obvious that some review notes indicated that certain working papers were not on file.

Classifying the Data

First, each review point for all twenty-eight sets of notes was classified by one of the authors (classification 1). A second independent classification was carried out by either the other author (ten sets of review notes) or by an ex-Big-6 audit manager (the remaining eighteen sets of notes). Initial comparisons were made between the two classifications and the differences noted. Some differences were eliminated after adjustment for obvious misclassifications brought about through difficulties in reading the review notes, or unfamiliarity with the terms and symbols used. After these adjustments the two classifications agreed for 93.5 per cent of cases. The remaining 196 differences were subsequently resolved by reference to an audit manager currently employed by the accounting firm which supplied the review notes.[1]

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[1] While, in general, the classification of each review note was clear, it should be noted that some difficulty occurred in applying the above taxonomy for some cases where one classification may lead on to another. For example, C5 ('Clarification and/or additional explanation required') may give rise to that explanation subsequently being documented and so lead to E4 ('Delete/amend item on workpaper/including explanation'). Also, C4 ('Clarification of work performed') may indicate additional work being required. This was especially the case for rhetorical questions such as: 'Have we perused the register for old jobs?' This could be classified as C4 (clarification of work performed) or a direction to do more work, that is, peruse the register in addition to the audit tests which have already been conducted (F1 — 'Increase the extent of testing performed'). In order to classify consistently, the initial point was used to determine the classification, unless extra information which would clarify the situation was included in the review note.

TABLE 1

INSIGHTS INTO THE REVIEW PROCESS

Suggested issues raised in the review process	No. of review notes in each category	% of total points	% total for each category
A. Compliance with firm policy and procedure			
1. — Initial and date workpapers	62	2.1	
2. — Other compliance with firm policy and procedure	21	0.7	2.8
B. Compliance with a program step			
1. — Program to be signed off as evidence of compliance	15	0.5	0.5
C. Review indicates further explanations required			
1. — Explain the reason for a change in an account balance	70	2.3	
2. — An inconsistency in the workpapers regarding audit work performed or information shown thereon	140	4.7	
3. — Explain a change in method of accounting for a particular item	9	0.3	
4. — Clarification of work performed required	320	10.6	
5. — Clarification and/or additional explanation required	385	12.8	
6. — Discuss with subordinate	63	2.1	32.8
D. Provide advice to subordinate on approach to audit or preparation of workpaper	125	4.2	4.2
E. Better documentation (update/amend workpaper)			
1. — Conclusion on workpaper is outstanding or amendment to conclusion required	133	4.4	
2. — Cross-referencing required or references generally missing or require adjustment/schedules to be agreed	233	7.7	
3. — File additional information — or remove unnecessary workpapers	56	1.9	
4. — Delete/amend item on workpaper/including explanation	149	4.9	
5. — Indicate audit work performed.	50	1.7	20.6
F. Additional audit work or follow-up required			
1. — Increase the extent of testing performed, i.e., do some more work	110	3.7	
2. — Additional analytic-review type work required	77	2.5	
3. — Obtain or prepare additional supporting documentation and/or information, e.g., confirmations/minutes/client schedules, etc.	149	4.9	
4. — Outstanding work — or items to clear/follow-up required	462	15.4	
5. — General instruction to subordinate to ensure that sufficient work has been performed (to check if work has been completed), or something has been considered	29	0.9	
6. — Workpapers missing	38	1.3	28.7
G. Indications of adjusting entries or potential adjustments	121	4.0	4.0
H. Financial statement/report disclosure item	59	2.0	2.0
I. Management letter point disclosed	89	3.0	3.0
J. Unclassifiable	43	1.4	1.4
Totals	3,008	100	100

RESULTS

Overview of the Classification of Review Notes

The frequency and percentage scores for each of the individual classification categories and subcategories, of issues raised in the review process, are shown in Table 1. A brief review of these findings indicates that three classification categories occur by far the most frequently, accounting for 82.1 per cent of the total of the review notes classified. The three categories are 'review indicates further explanations required' (32.8 per cent), 'review indicates additional audit work or follow-up required' (28.7 per cent), and 'review indicates improvements in documentation required' (20.6 per cent).

Classification Details

The bulk of 32.8 per cent of review notes needing further explanations related to failure to provide an explanation for a change in account balance (C1, 2.3 per cent), inconsistencies noted in the workpapers (C2, 4.7 per cent), clarification of work performed (C4, 10.6 per cent), and clarification and/or additional explanations required (C5, 12.8 per cent).[2]

Review notes categorized as providing advice to subordinates on the approach to the audit or preparation of workpapers (D) accounted for 4.2 per cent of the total. While this *direct* advice is rather small, many other categories, for example, most points in C, E and F, provide training to subordinates by asking for further information, better documentation, additional work, or follow-up procedures.

The requirement for 'better documentation or the need to update or amend workpapers' (E), accounted for 20.6 per cent of the total of review notes classified. The majority of these related to 'conclusions on workpapers outstanding or an amendment being required' (E1, 4.4 per cent), 'cross referencing omitted, or schedules to be agreed' (E2, 7.7 per cent), and the necessity to 'delete or amend an item on the workpapers' (E4, 4.9 per cent).[3] It should be noted again that many of the review notes classified as C4 and C5 could eventually lead to better documentation, in particular E4 and E5.

F1 and F2, which together account for 6.2 per cent of the total review notes, were concerned with gathering further evidence. However, the resolution of some of the points in C1 to C6 could also result in further evidence being obtained. F3 to F6 related generally to the need for follow-up, accounting for a total of 22.5 per cent.

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[2] Examples of C2 include, 'why don't the adjustments for S3.1 line up to S3.2?' and 'tax loss c/f per L1 does not agree to unrealised tax losses per L2'. Distinguishing C4 and C5 is that the former indicates the reviewer was uncertain as to what audit work had been carried out by the subordinate while the latter covers queries or uncertainties about information and explanations included in or omitted from the workpapers. Examples of C4 include, 'what work has been done on M.V.?', and 'have opening balance selections been made?' Examples of C5 include, 'are the ABC accounts included in 31.12.86 results?', '$30,101 spent on temp. staff — who do they use, what for?' and 'why is $65,063 for XYZ included in trade creditors?'

[3] Examples of these classifications include for E1: '9.4, 9.5 — conclude', 'Schedule 6.1, conclusion is outstanding'; E2: 'agree to financial statements', 'reference to relevant workpapers'; and for E4: 'brief note required stating where income is derived, how recorded', and 'update description of annual leave...'

Review notes categorized as directly indicating adjustments or potential adjustments to the financial statements (G), accounted for 4.0 per cent of the review notes. As already noted, some points classified earlier could lead to another classification. For example, further work (F) or further explanations (C) may result in disclosing points not previously considered, and so lead to a potential adjustment.

Review notes indicating the necessity for disclosure in the financial statements, and/or reports (H) accounted for 2.0 per cent of the total review notes. These review notes generally related to the draft financial statements, and include the following examples: 'report item re ship lease', 'loan on accounts should be transferred to current liabilities' and 'audit opinion — qualify re physical livestock verification'. Subsequent follow-up revealed that the final set of accounts were not qualified. Some of the earlier points classified under further explanations (C) and further work (F), may lead to additional management letter points being disclosed.

Individual Manager Differences

Table 2 shows the frequency and percentage scores by category for the thirteen managers included in the study. In relation to the three most frequently occurring classification categories, certain observations on differences between managers can be made. Table 2 records that for all thirteen managers, over 28 per cent of their review notes related to 'further explanations being required' (C). Over 23 per cent

TABLE 2

CLASSIFICATIONS BY INDIVIDUAL MANAGERS

Suggested issues raised in the review process							% by category						
Manager	1	2	3	4	5	6	7	8	9	10	11	12	13
A. Compliance with firm policy and procedure													
1	5.0	4.5	0.1	—	7.1	—	—	4.2	4.0	0.9	1.3	0.5	—
2	—	—	0.9	—	—	0.3	—	1.1	—	2.3	0.7	—	—
	5.0	4.5	1.0	—	7.1	0.3	—	5.3	4.0	3.2	2.0	0.5	—
B. Compliance with a program step													
	—	0.3	0.6	—	2.0	0.7	—	1.1	—	0.2	—	0.5	3.2
C. Review indicates further explanations required													
1	7.0	0.5	2.4	—	1.0	1.3	6.7	2.6	4.6	2.8	2.3	2.7	—
2	6.0	7.0	5.5	5.0	7.1	4.7	3.3	3.1	4.6	2.8	4.4	4.3	—
3	1.0	0.3	0.1	—	—	0.3	—	—	—	0.2	—	2.1	—
4	7.0	11.7	10.3	10.0	14.1	13.5	23.4	12.4	7.5	10.6	10.4	4.3	3.2
5	10.0	8.3	11.5	11.2	20.2	15.8	13.3	10.3	10.4	12.4	20.2	16.0	9.7
6	6.0	2.9	0.6	3.8	—	1.7	6.7	0.3	1.7	2.8	1.0	3.2	25.8
	37.0	30.7	30.4	30.0	42.4	37.3	53.4	28.7	28.8	31.6	38.3	32.6	38.7

D. Provide advice to subordinate on approach to audit or preparation of workpaper	1.0	2.6	4.3	3.8	—	3.4	—	3.4	5.8	6.7	3.7	8.5	—
E. Better documentation (update/amend workpaper)													
1	5.0	4.6	4.7	11.3	3.0	1.7	—	7.1	3.5	2.8	5.7	3.2	3.2
2	5.0	11.2	12.7	6.2	9.1	3.0	3.3	15.5	0.6	3.7	5.7	1.6	—
3	1.0	1.6	1.2	3.8	—	1.0	—	3.2	3.5	1.6	2.0	2.1	6.5
4	5.0	4.1	4.5	2.5	6.1	2.7	3.3	4.7	9.2	6.7	4.7	5.9	—
5	2.0	1.0	0.9	1.2	1.0	2.0	—	3.7	1.2	1.1	2.0	2.1	—
	18.0	22.5	24.0	25.0	19.2	10.4	6.6	34.2	18.0	15.9	20.1	14.9	9.7
F. Additional audit work or follow-up required													
1	3.0	2.3	5.7	1.2	2.0	5.0	—	1.3	3.5	6.5	3.0	1.6	—
2	5.0	1.8	3.1	—	2.0	2.4	3.3	0.8	1.2	1.6	2.3	10.6	—
3	7.0	2.6	3.1	8.8	2.0	8.8	6.7	1.8	7.5	4.6	8.1	5.3	16.2
4	10.0	16.9	16.4	23.7	16.3	15.2	3.3	12.3	15.0	17.5	10.4	18.6	22.6
5	2.0	1.3	1.9	—	1.0	—	3.3	—	1.7	0.7	0.7	1.1	—
6	—	2.6	0.6	2.5	1.0	2.4	6.7	1.1	1.2	0.9	1.0	—	—
	27.0	27.5	30.8	36.2	24.3	33.8	23.3	17.3	30.1	31.8	25.5	37.2	38.8
G. Indications of adjusting entries or potential adjustments	2.0	5.7	3.3	—	—	4.0	—	4.5	6.9	4.2	3.7	5.3	—
H. Financial statement/report disclosure item	10.0	0.5	2.9	—	4.0	4.0	—	—	1.2	2.3	1.0	—	3.2
I. Management letter point disclosed	—	5.7	1.2	3.8	1.0	5.1	16.7	4.2	5.2	1.3	1.4	0.5	—
J. Unclassifiable	—	—	1.5	1.2	1.0	1.0	—	1.3	—	2.3	4.4	—	6.4
Number of audits examined	3	2	4	1	1	5	2	1	1	3	3	1	1
Total number of review notes	100	385	513	80	99	297	30	380	173	434	298	188	31

of each manager's review notes, with the exception of manager 8, were classified as 'indicating additional audit work or follow-up required' (F). Finally, the extent to which 'better documentation' (E) was indicated varied substantially among managers (6.6 per cent to 34.2 per cent).

Considerable variation between managers is also evident in regard to some of the less significant classification categories. For example, variations on 'compliance with firm policy' (A) are evident with scores ranging from zero to 7.1 per cent. In addition, it is noted that three managers provided no direct advice on 'audit approach' (D) to subordinates in their review notes, while for managers 9 and 10, 5.8 and 6.7 per cent, respectively, of the review notes indicated such advice. Also, there were some differences in categories G, H and I.[4]

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[4] Care should be exercised in interpreting the results for those managers, particularly 7 and 13, for which there is only a small number of review notes.

DISCUSSION

The aim of this study was to provide additional evidence as to the nature and purpose of the review process by looking at actual review notes as prepared by managers of a Big-6 accounting firm. An examination of these review notes has revealed the following:

1. Quality-control aspects appeared to be the main focus of the review notes, with most emphasis on the need for further explanations, better documentation and follow-up procedures (see items C, E and F in Table 1).
2. The review notes indicated the need for some further gathering of evidence in the form of further testing or analytical review work (see items F1 and F2 of Table 1). In addition, some of the required further explanations from C may lead to further testing.
3. As well as a substantial amount of indirect advice on the audit approach, some direct advice on audit approach was communicated to subordinates by most of the managers.
4. While there were some indications of potential adjustments, on the whole relatively few surprises appeared to have resulted from the review process.
5. The review notes did vary somewhat among managers, both as to issues raised in the process, the number of review notes and the manner in which the notes were prepared.

Although the research methods used in this study are very different from those used by Bamber and Bylinski (1982), the evidence obtained supported a number of their findings. These included: review notes are primarily concerned with documentation, review notes lead to additional testing, and review notes result in infrequent surprises. Bamber and Bylinski's (1982) suggestion that reviews differed among managers was also supported, not only in the approach to review but also in the issues raised by the process. Our results showed differences between managers in the number and type of review notes given. These differences may be due to such factors as the level of experience of the manager (for example, new manager versus an established manager), number of times on this audit or the review style of the manager. Alternatively, these differences could be due to client-related factors (for example, size, industry and risk levels) or attributes of the person being reviewed (for example, experience, perceived competence and reliability). To distinguish between these alternative explanations would require a larger cross-section of clients for each manager than was available for this study.

A number of the limitations of this study are noted. First, only a restricted examination of the review notes of a large office of one Big-6 firm occurred. This decision was based on the difficulty of gaining access to sensitive data and the need to limit the volume of review notes for analysis to a manageable level. Second, only review notes produced at the completion of the audit were examined. Review also takes place at the earlier stages of the audit. For example, planning programmes would be subject to review and would affect the nature, timing and extent of the audit procedures subsequently adopted; errors or discrepancies encountered during the course of the audit may be reviewed, resulting in some additional testing;

substantive and compliance programmes would be reviewed in order to determine the type of testing procedures required. Third, only the documented review process of audit managers is captured. In general, the review process is complex and consequently may involve much more than is evidenced in the review notes. It is acknowledged that the process can also be verbal, and issues such as adjustments or potential adjustments may have been brought to the attention of the manager and resolved prior to the formal review-making process.

The novelty of our research involves examining actual review notes to obtain evidence on the review process. Quality control aspects were found to be the main focus of the review process. Some review notes lead to the gathering of additional evdience and the review process provided some direct as well as indirect advice on the conduct of the audit. Considerable variation between managers was noted in their review notes and approaches to the review process.

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ABACUS, Vol. 28, No. 2, 1992

LEO G. VAN DER TAS

Measuring International Harmonization and Standardization: A Comment

Key words: Accounting policies; Standardization; Uniform systems of accounts.

In the March 1990 issue of this journal Tay and Parker (T&P) compared six studies in the field of international accounting. According to T&P, each of those studies deals with the measurement of international harmonization of financial reporting and they evaluate the advantages and disadvantages of those studies. Moreover, T&P suggest an alternative methodology for measuring harmonization. This comment is a reaction to the definitions and methodology applied and the suggested alternative method for measuring harmonization of financial reporting.

Although there is increasing interest in international accounting, little research has been done in the field of the measurement of (international) harmonization. That is why contributions like that of T&P are very important.

STUDIES EXAMINED

First of all, only two of the six studies T&P refer to are really trying to measure harmonization (Nair & Frank, 1981, and van der Tas, 1988). The other four are measuring the degree of compliance with or observance of the standards of the International Accounting Standards Committee (IASC). Although T&P argue that Evans and Taylor (1982) and Doupnik and Taylor (1985) believed they were measuring de facto harmonization, the articles of Evans and Taylor and Doupnik and Taylor provide no evidence of the fact that they did believe so. This makes a comparison of both categories of studies less appropriate. International harmonization on the one hand and compliance or observance with IASs on the other are related in the sense that setting international standards may further harmonization. But they are two very different phenomena.

1. When an IAS allows different methods to be applied and companies apply these different methods, compliance with the IAS may be high, but because different methods are applied, the degree of harmony may be low.

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2. If all or a large number of companies apply the same method, the degree of harmony is high. The degree of compliance with IASs, however, may be low when that method is not allowed by the IAS. A comparable situation existed when APB-Opinion 2 on accounting for the Investment Tax Credit (ITC) in the United States of America prescribed the deferral method, but most of the companies applied the flow-through method (compliance is low, the degree of harmony is high).

One could argue that the first problem will be reduced after the adoption of IASC's Exposure Draft 32 on comparability (1989) and the related Statement of Intent (IASC, 1990) because the number of options offered by IASs will be reduced, but it will increase the second problem. That is, the degree of observance of or compliance with IASs is a poor proxy for the degree of harmony.

DEFINITIONS

I agree with T&P that a distinction must be made between harmonization of financial reporting regulation (defined by T&P as '*de jure* harmonization') and harmonization of accounting practice ('*de facto* harmonization'). I also agree that harmony and uniformity are states while (dis)harmonization is a process which reflects a decrease/ an increase in the degree of harmony. Both distinctions were made in my earlier article (van der Tas, 1988). However, the distinction between standardization (strict rules) and harmonization (less strict rules) is less appropriate. What T&P are probably trying to say is that before we are able to measure harmonization, we will first have to define the level of detail at which we want to measure harmony. For example, when accounting for deferred taxation, a distinction can be made between the application of the tax payable method and the deferral method. We can measure the degree of harmony concerning the choice companies make between these two alternatives. This implies a low level of detail. However, we can also increase the level of detail at which we measure the degree of harmony when we distinguish between alternative types of the deferral method: net-of-tax method versus separate deferred taxes; liability versus deferred method; and partial versus comprehensive method. At this level of detail the companies' choice between two methods changes into a choice between nine methods and we measure the degree of harmony concerning the choice companies make between these nine alternative methods.

Therefore, instead of a distinction between harmonization and standardization we can speak of different levels of detail at which to measure the degree of harmony. The choice of the level of detail is at the discretion of the researcher and determined by the purposes of the study.

The distinction between measurement harmony and disclosure harmony is very important when seeking to measure harmonization. Measurement harmonization is concerned with the choice between alternative measurement methods. Disclosure harmonization is concerned with the amount and detail of information supplied in the financial report. To clarify the importance of this distinction we will consider the goals of harmonization. *De facto* measurement harmonization is aimed at an improvement in the comparability of financial reporting. To facilitate comparability, it is important that companies operating in comparable circumstances make the same choice between alternative accounting methods. This would eliminate one of the disturbing aspects causing differences between the figures in a financial report not originating from performance differences. But is it important that companies make the same choice in disclosure issues? Does the fact that one company is disclosing particular information while the other is not cause any problem? *De facto* disclosure harmonization is aimed at the disclosure of specified information with a specified degree of detail, which is regarded as the minimum required for all financial reports. In order to conform with this minimum disclosure, we will have to distinguish between items which form part of the minimum information to be disclosed and other items. In respect of items which belong to the minimum information, the degree of harmony increases when the percentage of companies disclosing that information increases. To assess *de facto* disclosure harmonization in respect of other items, the degree to which that information is disclosed is of no interest. If the degree of *de facto* disclosure harmony was measured the same way as *de facto* measurement harmonization, namely as the extent to which companies make the same choice between alternatives, harmony would increase when, instead of 60 per cent, 80 per cent of the companies do *not* disclose information concerning a particular item. This is a rather strange interpretation of *de facto* disclosure harmonization. Still this would be the outcome of T&P's method if they applied it to measure disclosure harmony.

Also in respect of *de jure* harmony, the distinction between measurement and disclosure harmony is important. Apart from improving *de facto* measurement harmony, one of the aims of measuring *de jure* harmony is the avoidance or removal of obstacles such as conflicting or substantially different standards. In disclosure issues, standards may differ substantially but will seldom conflict, because few standards will prohibit companies from disclosing particular information in the financial report. Differing from measurement issues, in *de jure* disclosure harmonization the introduction of minimum standards is important.

The conclusion reached from the argument presented above is that it is not possible to develop one method for measuring both *de jure* harmony and *de facto* harmony. Differing methods must be developed for measurement and disclosure issues respectively. T&P argue (pp. 84–5) that measurement studies should focus on actual reporting practices rather than regulation, that is, on *de facto* rather than *de jure* harmonization. These are, however, two different phenomena, each pursuing different goals.

SUGGESTED METHOD OF MEASURING HARMONIZATION

As pointed out above, only two of the studies in T&P's analysis provide methods for measuring harmonization. One of these studies (Nair and Frank, 1981) claims to be measuring *de jure* harmonization, both disclosure and measurement. Their idea is to classify countries into five categories with respect to each accounting method or disclosure issue. These five categories are: required (application of this accounting method or the disclosure of this particular information respectively is required in this country); predominant practice; minority practice; no application; not permitted.

According to Nair and Frank, the movement toward harmonization is defined as movement in the direction taken by a majority of countries toward requiring (or prohibiting) a given accounting practice. The Nair and Frank method is, however, not appropriate to measure either *de jure* measurement harmony/harmonization or *de jure* disclosure harmony/harmonization. Apart from the terminology and data problems already brought forward by T&P, their method mixes up accounting regulation and accounting practice. The five categories incorporate both regulation (required, not permitted) and practice (predominant practice, minority practice and no application) which implies that neither *de jure* harmony, nor *de facto* harmony is measured. Moreover, in disclosure issues they do not distinguish between items which can be considered part of the minimum information to be disclosed and other items. Furthermore, as far as *de jure* measurement harmony is concerned, their measurement harmony approach is incorrect. They start by looking at a particular measurement method, while the starting point for measuring measurement harmony should be a particular sort of transaction or event to be accounted for by alternative measurement methods. If, for example, all countries prohibit measurement method A, their conclusion would be that the degree of *de jure* measurement harmony is high. However, the degree of *de jure* measurement harmony may be very low, for example, when that sort of transaction must be accounted for by method B in country I, by method C in country II and by method D in country III. So we may conclude that the Nair and Frank method is inappropriate for *de jure* measurement harmony and is only applicable to measuring *de jure* disclosure harmony when it is modified.

The second study providing methods to measure harmony/harmonization is my earlier study (1988). I provide two methods to measure the degree of *de facto* measurement harmony, namely the H index and the C index. The H index is calculated as the square of the relative frequencies of each of the alternative measurement methods for a particular sort of transaction or event, applied by companies. In this way a concentration of the companies on one or only a few alternative measurement methods leads to a higher H index, indicating an increase in the degree of harmony. The criticism of T&P upon the H index concerns the fact that this index is a concentration index for which no significance tests have been derived to indicate how trivial or significant (statistically) variations in index values are. This is indeed a problem. Unfortunately T&P do not discuss the other *de facto* measurement harmony method (C index) because this index does not suffer from this problem, as shown below.

The C index is not a concentration index. It is a ratio, calculated as the number of comparable pairs of financial reports divided by the total number of pairs of financial reports. So there is no problem in applying the usual statistical significance tests. We are even able to apply regression analysis. The advantages of the C index are that:

1. The C index is able to include the effect on the degree of *de facto* measurement harmony of multiple reporting and the disclosure of additional information in the notes on the accounts enabling the reader to reconcile the financial report into a report based upon an alternative measurement method.
2. Movements in the C index can be tested for their significance and can be correlated with movements in explaining variables such as the introduction of a standard.

The alternative to the measurement harmonization approach suggested by T&P (p. 85) involves the following:

> [First] ... data on proportions of companies using different accounting methods can be obtained ... [Second,] ... the observed distribution of companies among different methods ... [is compared] ... with either a random distribution or some expected distribution. A suitable proxy for the former could be a uniform/equal/rectangular distribution, that is, a distribution in which equal numbers of companies would be expected to use each of the available alternatives. (This would represent no preference for, or bias towards, any one available method.) Evidence of harmony would then be the existence of a significant difference between the observed and expected distributions, as measured by some appropriate significance test, for example, chi-square. [Finally,] the level of harmony could then be quantified by using a concentration index, preferably one describing the entire distribution, rather than just a portion of it. Comparison of level of harmony over different periods would yield evidence of harmonization or disharmonization.

Unfortunately T&P did not illustrate their method and, by its description, it seems rather complicated and leaves some questions unanswered, such as what significance test and what concentration measure to apply and how to apply the method in disclosure issues. Moreover, the significance test included in their method is not used to test the significance of movements in the degree of harmony, as one would expect when looking at their criticism of the H index, but it is directed towards the significance of the degree of harmony itself. The significance of movements in the degree of harmony is not tested by their method either. That is, their method suffers from the same problem they raised against the H index.

Further disadvantages of the methodology of T&P are that it is not able to include the impact of multiple reporting or additional information in the notes on the accounts on the degree of *de facto* measurement harmony, because each financial report can only be allocated to one alternative measurement method.

The conclusion reached is that the methodology of Tay and Parker is certainly not a better method to measure *de facto* measurement harmony than the C index, and may even be worse.

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ABACUS, Vol. 28, No. 2, 1992

J. S. W. TAY AND R. H. PARKER

Measuring International Harmonization and Standardization: A Reply

Key words: Accounting policies; Standardization; Uniform systems of accounts.

Van der Tas' comment (1992) on our article (Tay and Parker, 1990) is greatly appreciated for two reasons: first, as he points out, and as evidenced by our article, there is little research in the field of measuring international harmonization and standardization; second, because his original paper (van der Tas, 1988) was instrumental in beginning our evaluation of different measurement approaches.

We consider our article a preliminary examination of the issues involved in the measurement of harmonization and standardization. It did not include an example of the measurement approach we proposed, as we did not have what we had suggested were the necessary data, nor had we concluded which (if any) of the available concentration measures and tests of statistical significance to apply. These issues have been addressed in a more comprehensive work (Tay, 1989), and will be dealt with below.

STUDIES EXAMINED

Measuring Harmonization

Only two of the six studies we reviewed contained the word 'harmonization' in their title, and explicitly cited harmonization measurement as a formal objective. In the four other studies, however, compliance with IASC standards was more or less explicitly linked with harmonization, indicating, to our minds, that the authors of those studies had assumed that greater compliance with IASC standards would be equivalent to greater harmony of financial reporting.

Compliance with IASC Standards and Harmonization

We recognize, as does van der Tas, the difference between the two phenomena of compliance with IASC standards and accounting harmonization, hence the distinction we drew between *de jure* and *de facto* harmonization. The point which

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was made was that some of the authors of these studies appeared not to be aware of this difference.

DEFINITIONS

Standardization and Harmonization

Van der Tas' point about differing levels of detail at which harmony may be measured is interesting, and conceptually important. However, it is not what we meant when discussing the differences between standardization and harmonization. The former we associated with regulation applying to all companies, legal regulation and/or regulation containing precise definitions; the latter with regulation affecting only certain subsets of companies, professional regulation and regulation containing discretionary definitions. In short, the concept of standardization appears to us to be associated with reduction or exclusion of choice; harmonization with a degree of flexibility and some choice.

Measuring Measurement and Disclosure Harmonization

One of our first statements about harmonization measurement was that it is simply concerned 'with the similarity or otherwise of accounting practices and regulations' (p. 71). We followed this with a general definition of harmony as 'a "clustering" of companies around one or a few of the available [accounting] methods' (p. 73). This implies that pure harmonization is, in a sense, value neutral, that is, not concerned with whether suitable or unsuitable accounting methods are being used, or more or less information is being disclosed. If one accepts this premise, then the same measure can be applied to measurement and disclosure harmony. Otherwise, we agree with van der Tas that strange results can be obtained in relation to disclosure harmony. However, incorporating some notion of more suitable accounting methods or higher levels of disclosure (such as the 'minimum information to be disclosed' suggested by van der Tas) will inevitably introduce value judgment — and subjectivity — to the measurement process. It will also, in our opinion, necessitate the use of a separate measure.

De jure *and* de facto *Harmony*

The measurement of *de jure* harmony was not explicitly addressed in our article, as our main concern was (and remains) with *de facto* harmony. We appreciate van der Tas' point about the different aims of *de jure* harmonization, although we do not agree with it completely. However, the measurement of *de jure* harmonization does not appear to us a very useful exercise in itself, if the ultimate concern of harmonization is to increase the comparability of financial reporting. In fact, focusing on *de facto* harmony when regulation changes would help to indicate the closeness (or otherwise) of the link between *de jure* and *de facto* harmonization. This would be important in terms of evaluating the effectiveness of, for example, the harmonization efforts of the IASC and the EC.

SUGGESTED METHOD OF MEASURING HARMONIZATION

Application

The methodology we proposed has since been applied in more or less the manner suggested (Tay, 1989). Briefly:

1. Data on accounting methods and disclosure levels were obtained from the financial statements of listed companies from five different countries.
2. For each accounting method or disclosure item, companies were grouped according to the practice followed.
3. The chi-square test was used to assess the significance of the actual degree of harmony demonstrated by the grouping, compared with a rectangular distribution.
4. Harmony was quantified using two different concentration measures — the H-index suggested by van der Tas, and the entropy measure (E) — in three different forms (absolute, numbers-equivalent and relative measures).
5. Improvements in the level of disclosure and superiority of accounting method were quantified using a disclosure index.
6. The effects of disclosure of information and accounting methods on comparability were quantified by calculating the C index.
7. Changes in the values of H, E, C and the disclosure index were tested for statistical significance by using nonparametric tests.

Problems Encountered with Harmony Measures

A general problem associated with using concentration measures to quantify harmony stems from their implicit weighting of clustering (*c*) of companies around one or two of a number of available alternatives, against the number (*n*) of those available alternatives. Intuitively, harmony should increase when *c* increases, and decrease when *n* increases. However, it is difficult to predict how a particular harmony measure will react when both *c* and *n* change at the same time, and in different directions.

A survey of common concentration measures suggested by the relevant literature suggested that the Herfindahl index (H) and the entropy measure (E) would be the best measures to test. In application, the latter proved to be unsatisfactory in two instances: first, it could not be calculated when the companies in the sample failed to use one of the available accounting methods; second, values of the relative E measure sometimes conflicted with values for the absolute and numbers-equivalent forms of E. H therefore proved to be a more reliable measure of harmonization, and appeared to be most meaningful in its numbers-equivalent form.

Problem with the Comparability Measure

The C-index value is affected by changes in either similarity of accounting methods used (i.e., harmony) or disclosure or both. Once again, there was a general problem of assessing how the index weights changes in harmony against changes in disclosure, which occur at the same time.

Statistical Significance of the Degree of Harmony and Harmonization

We believe that assessing the significance of the existing degree of harmony (compared to no preference or bias in favour of any one method) is an important part of measuring harmonization. For a start, it could indicate to standard-setters areas in which the existing situation is satisfactory. Also, given the lack of significance tests for the various measures used, comparing the significance of the degree of harmony at different points in time appears to be an acceptable substitute for evaluating the significance of harmonization. While van der Tas asserts that 'there is no problem in applying the usual statistical significance tests' to C, as it is not a concentration measure, he throws no light on exactly what tests he is referring to. It is our belief that more work should be conducted on the distribution of the measures used, and the distribution of companies among alternative accounting methods and levels of disclosure, and it is in these areas that our future efforts will be focused.

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———, 'Measuring International Harmonization and Standardization — a Comment', *Abacus*, September 1992.

ABACUS, Vol. 28, No. 2, 1992

Index to Volumes 25 to 28

Aitken, Michael (with Czernkowski) *Organizational Change within the Stockbroking Industry: A Contracting Perspective* Vol. 27, p. 97

Anderson, Teresa *Accounting Earnings Announcements and Differential Predisclosure Information* Vol. 28, p. 121

Beattie, Vivien A. (with Ryan) *The Impact of Non-Serial Publications on Research in Accounting and Finance* Vol. 27, p. 32

Bradbury, Michael (with Newby) *The Use of a Statement of Changes in Financial Position to Interpret Financial Data: An Empirical Investigation* Vol. 25, p. 31

Bricker, Robert *The Importance of History for Accounting Research* Vol. 27, p. 72

Brown, Philip (with Izan and Loh) *Fixed Asset Revaluations and Managerial Incentives* Vol. 28, p. 36

Brunovs, Rudolf (with Kirsch) *Goodwill Accounting in Selected Countries and the Harmonization of International Accounting Standards* Vol. 27, p. 135

Cameron, Alex B. (with Stephens) *The Treatment of Non-Recurring Items in the Income Statement and their Consistency with FASB Concept Statements* Vol. 27, p. 81

Chalos, Peter *Conjunctive Explanations in Cost Variance Investigation: Experimental Replications and Extensions* Vol. 27, p. 1

Chambers, R. J. *Time in Accounting* Vol. 25, p. 7

Chan, Yoke Kai (with Whittred) *Asset Revaluations and the Mitigation of Underinvestment* Vol. 28, p. 58

Charitou, Andreas (with Ketz) *An Empirical Examination of Cash Flow Measures* Vol. 27, p. 51

Chetwin, M. C. *Apportionment in Contract Actions: New Zealand's Innovative Approach* Vol. 26, p. 89

Cheung, Joseph K. (with Li) *Income Tax Effects on Asset Valuation and Managerial Analysis* Vol. 28, p. 98

Chow, Chee W. (with Shields and Whittington) *The Effects of State Risk and Controllability Filters on Compensation Contract and Effort Choice* Vol. 25, p. 39

Chung, Ken H. (with Pak and Cox) *Patterns of Research Output in the Accounting Literature: A Study of the Bibliometric Distributions* Vol. 28, p. 168

Coffman, Edward N. (with Previts and Parker) *An Accounting Historiography: Subject Matter and Methodology* Vol. 26, p. 136

Coffman, Edward N. (with Previts and Parker) *Accounting History: Definition and Relevance* Vol. 26, p. 1

Cox, Raymond A. K. (with Chung and Pak) *Patterns of Research Output in the Accounting Literature: A Study of the Bibliometric Distributions* Vol. 28, p. 168

Czernkowski, Robert (with Aitken) *Organizational Change within the Stockbroking Industry: A Contracting Perspective* Vo. 27, p. 97

DePree, Chauncey M., Jr *Testing and Evaluating a Conceptual Framework of Accounting* Vol. 25, p. 61

Dunk, Alan S. *Management Accounting Lag* Vol. 25, p. 149

Fetters, Michael L. (with Livingstone) *Inconsistency in U.S. Accounting Standards: The Treatment of Interest* Vol. 25, p. 116

Goodwin, Jenny (with Henderson) *The Case Against Asset Revaluations* Vol. 28, p. 75

Graves, O. Finlay *Walter Mahlberg's Valuation Theory: An Anomaly in the Development of Inflation Accounting* Vol. 25, p. 22

INDEX

Grinyer, John R. (with Russell) *Goodwill — an Example of Puzzle-Solving in Accounting — a Comment* Vol. 28, p. 107

Gul, Ferdinand A. *Size of Audit Fees and Perceptions of Auditors' Ability to Resist Management Pressure in Audit Conflict Situations* Vol. 27, p. 162

Henderson, Scott (with Goodwin) *The Case Against Asset Revaluations* Vol. 28, p. 75

Hogan, Warren P. *Insider Trading: Implications and Responses* Vol. 25, p. 85

Hopkins Roger (with Ma) *Goodwill — an Example of Puzzle-Solving in Accounting — a Reply* Vol. 28, p. 113

Izan, H. Y. (with Brown and Loh) *Fixed Asset Revaluations and Managerial Incentives* Vol. 28, p. 36

Johnstone, D. J. *Sample Size and the Strength of Evidence: A Bayesian Interpretation of Binomial Tests of the Information Content of Qualified Audit Reports* Vol. 26, p. 17

Ketz, Edward (with Charitou) *An Empirical Examination of Cash Flow Measures* Vol. 27, p. 51

Kirsch, Robert J. (with Brunovs) *Goodwill Accounting in Selected Countries and the Harmonization of International Accounting Standards* Vol. 27, p. 135

Lee, Geoffrey A. *Manuscript Additions to the Edinburgh University Copy of Luca Pacioli's* Summa de Arithmetica Vol. 25, p. 125

Loh, Alfred L. (with Brown and Izan) *Fixed Asset Revaluation and Managerial Incentives* Vol. 28, p. 36

Li, Mandy (with Cheung) *Income Tax Effects on Asset Valuation and Managerial Analysis* Vol. 28, p. 98

Livingstone, John Leslie (with Fetters) *Inconsistency in U.S. Accounting Standards: The Treatment of Interest* Vol. 25, p. 116

Lowry, John F. *Management Accounting and Service Industries: An Exploratory Account of Historical and Current Economic Contexts* Vol. 26, p. 159

Ma, Ronald (with Hopkins) *Goodwill — an Example of Puzzle-Solving in Accounting — a Reply* Vol. 28, p. 113

Mattessich, Richard *Accounting and the Input-Output Principle in the Prehistoric and Ancient World* Vol. 25, p. 74

McEnroe, John E. *Cash Flow Accounting Revisited: A Note on a Partial Replication of the Lee Study* Vol. 25, p. 56

Morris, Richard D. *Distributable Profit in Britain Since 1980: A Critical Appraisal* Vol. 27, p. 15

Motyka, Wolodymyr *The Impact of Western Europe on Accounting Development in Tsarist Russia Prior to 1800* Vol. 26, p. 36

Nandy, Somendra Chandra (with Scorgie) *Emerging Evidence of Early Indian Accounting* Vol. 28, p. 88

Newby, Sonja (with Bradbury) *The Use of a Statement of Changes in Financial Position to Interpret Financial Data: An Empirical Investigation* Vol. 25, p. 31

Nobes, Christopher *A Political History of Goodwill in the U.K.: An Illustration of Cyclical Standard Setting* Vol. 28, p. 142

Olan, Michael J. (with Sampson) *An Innovation in Auditing: Matrix Summaries of Journal Entries* Vol. 28, p. 133

Pak, Hong S. (with Chung and Cox) *Patterns of Research Output in the Accounting Literature: A Study of the Bibliometric Distributions* Vol. 28, p. 168

Parker, Lee D. (with Previts and Coffman) *An Accounting Historiography: Subject Matter and Methodology* Vol. 26, p. 136

Parker, Lee D. (with Previts and Coffman) *Accounting History: Definition and Relevance* Vol. 26, p. 1

Parker, R. H. (with Tay) *Measuring International Harmonization and Standardization* Vol. 26, p. 89

Parker, R. H. (with Tay) *Measuring International Harmonization and Standardization: A Reply* Vol. 28, p. 217

Phillips, G. Edward *Inflation Adjustments to Income in Entry and Exit Price Systems* Vol. 26, p. 185

INDEX

Previts, Gary John (with Parker and Coffman) *An Accounting Historiography: Subject Matter and Methodology* Vol. 26, p. 136

Previts, Gary John (with Parker and Coffman) *Accounting History: Definition and Relevance* Vol. 26, p. 1

Roebuck, Peter (with Trotman) *A Field Study of the Review Process: Research Note* Vol. 28, p. 200

Russell, Alex (with Grinyer) *Goodwill — an Example of Puzzle-Solving in Accounting — a Comment* Vol. 28, p. 107

Ryan, Robert J. (with Beattie) *The Impact of Non-Serial Publications on Research in Accounting and Finance* Vo. 27, p. 32

Sampson, Wesley C. (with Olan) *An Innovation in Auditing: Matrix Summaries of Journal Entries* Vol. 28, p. 133

Scorgie, Michael E. *Early Arithmetics and Acounting Histories: A Comment* Vol. 27, p. 78

Scorgie, Michael E. *Indian Imitation or Invention of Cash-Book and Algebraic Double-Entry* Vol. 26, p. 63

Scorgie, Michael E. (with Nandy) *Emerging Evidence of Early Indian Accounting* Vol. 28, p. 88

Shields, Michael D. (with Chow and Whittington) *The Effects of State Risk and Controllability Filters on Compensation Contract and Effort Choice* Vol. 25, p. 39

Stephens, Lynn (with Cameron) *The Treatment of Non-Recurring Items in the Income Statement and their Consistency with FASB Concept Statements* Vol. 27, p. 81

Sterling, Robert R. *Positive Accounting: An Assessment* Vol. 26, p. 97

Stewart, Jenice P. *The Significance of an 'Orientation Postulate'* Vol. 25, p. 97

Subotnik, Dan *'Knowledge Preservation in Accounting': Does it Deserve to be Preserved?* Vol. 27, p. 65

Tay, J. S. W. (with Parker) *Measuring International Harmonization and Standardization* Vol. 26, p. 71

Tay, J. S. W. (with Parker) *Measuring International Harmonization and Standardization: A Reply* Vol. 28, p. 217

Tippett, Mark *The Estimation of Realizable Holding Gains* Vol. 25, p. 135

Trotman, Ken T. (with Roebuck) *A Field Study of the Review Process: Research Note* Vol. 28, p. 200

van der Tas, Leo *Measuring International Harmonization and Standardization: A Comment* Vol. 28, p. 211

Walker, R. G. *The SEC's Ban on Upward Asset Revaluations and the Disclosure of Current Values* Vol. 28, p. 3

Walton, Peter *Harmonization of Accounting in France and Britain: Some Evidence* Vol. 28, p. 186

Ward, J. M. *Opening Address: Fifth World Congress of Accounting Historians* Vol. 25, p. 3

Whittred, Greg (with Chan) *Asset Revaluations and the Mitigation of Underinvestment* Vol. 28, p. 58

Willett, R. J. *Transactions Theory, Stochastic Processes and Derived Accounting Measurement* Vol. 27, p. 117

Whittington, O. Ray (with Shields and Chow) *The Effects of State Risk and Controllability Filters on Compensation Contract and Effort Choice* Vol. 25, p. 39

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